BIRDS OF INDIA

BEING

A NATURAL HISTORY

OF ALL

THE BIRDS KNOWN TO INHABIT CONTINENTAL INDIA:

WITH

Descriptions of the Species, Genera, Families, Tribes, and Orders, and a Brief Notice of such Families as are not found in India,

MAKING IT A

MANUAL OF ORNITHOLOGY

SPECIALLY ADAPTED FOR INDIA

BY

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In Two Volumes.

VOL. I.

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To the Right Honorable

The EARL of ELGIN and KINCARDINE,

K. T., G. C. B., AND K. S. I.,

Viceroy and Governor General of India.

May it please your Excellency;

The following pages, which contain a portion of my observations on the Natural History of this Country, could not be more appropriately dedicated than to the head of the Government of India, under whose auspices, and by whose assistance, the Work has been undertaken.

It has, therefore, been to me a source of high gratification that your Lordship's permission has authorized me to lay before your Excellency this contribution to the knowledge of the Birds of India.

I am, with great respect,

Your Excellency's most obedient servant,

T. C. Jerdon,

Surgeon Major.

Calcutta, 1862.

PROSPECTUS.

THE want of brief, but comprehensive, Manuals of the Natural History of, India has been long felt by all interested in such inquiries. At the present, it is necessary to search through voluminous transactions of learned Societies, and scientific Journals, to obtain any general acquaintance with what has been already ascertained regarding the Fauna of India, and, excepting to a few more favorably placed, even these are inaccessible. The issue of a MANUAL, which should comprise all available information in sufficient detail for the discrimination and identification of such objects of Natural History as might be met with, without being rendered cumbrous by minutiæ of synonymy or of history, has therefore long been considered a *desideratum.*

To meet this want it is proposed to publish a series of such Manuals for all the Vertebrated Animals of India, containing characters of all the classes, orders, families, and genera, and descriptions of all the species of all Mammals, Birds, Reptiles, and Fishes, found in India.

The geographic limits referred to in this Work will be, on the North the water-shed of the Himalayas; on the East the Teesta river, to its junction with the Brahmapootra, and thence down the latter river to the Bay of Bengal; on the West the Indus from its exit from the hills to Kurrachee; and on the South Cape Comorin.

The object will be to enable Naturalists and Travellers to identify any animals they may meet with, and for this purpose the descriptions, without being minute, will be ample for discrimination. The habits and resorts of the different animals will be described as far as is known, and their geographical distribution investigated, and on these points the author's own experience in many parts of the country, from Darjeeling to Trichinopoly, will enable him to give much new information.

Short observations on the anatomy of the various families, and references to allied groups, not Indian, will be given, thus rendering the work a Hand-book of Zoology specially adapted for India.

Each Class will be published separately, and they will comprise—

The BIRDS	in two volumes,	8vo.
MAMMALS	in one volume,	,,
REPTILES	in one volume,	,,
FISHES	in one or two vols.	,,

PREFACE.

The present work is the first of a series of Manuals which the Author proposes to bring out, if his health be spared, on the Natural History of the Vertebrated Animals of India. The want of such books has long been greatly felt in this country; and the increasing attention now paid to Natural History calls, more imperatively, for the fulfilment of this desideratum.

The author's uninterrupted residence for above a quarter of a century in India, during which period he has diligently examined the Faunæ of the different districts in which he has been a resident, or a traveller, has enabled him to give, in detail. from personal observation, the geographic distribution and limits of most of the animals of this country; for, with the exception of the North-West Provinces, the Punjab, and Sindh, he has traversed and re-traversed the length and breadth of the continent of India, and has also visited Burmah.

This experience, and an earnest wish to be of use to naturalists and travellers in India, are the author's chief claims for attempting such an ambitious task; and, had others better qualified come forward, he would have relinquished, however unwillingly, what to him has been a labor of love. He has, however, had the inestimable advantage of constant correspondence, and, in latter years, of personal intercourse, with Mr. Blyth of the Asiatic Society's Museum, than whom no one would have been better qualified to write such a work, had his health been good, and his time his own. But the constant drudgery

of his unassisted labors, and above twenty-one years' residence in Calcutta, have so far injured his health as to preclude the present hope of his publishing a separate work. His voluminous writings, however, Reports, Notices, Monographs, &c., scattered through Twenty (20) volumes of the Journal of the Asiatic Society, and in various English scientific periodicals, are permanent proofs of his great talents and industry; and, were it not for those writings and the fine collection he has been the chief means of making in Calcutta, the present work would be much more imperfect than it now is.

Mr. Blyth has seen the present work, during its slow progress through the press, which he has most kindly assisted the Author in correcting; and has added much valuable information from his own knowledge and experience.

All these advantages, however, would have been unavailable, and the present publication would not have seen the light so early, had it not been for the enlightened liberality of the late deeply regretted Viceroy, Earl Canning. When the projected expedition to Tibet (of which the author was to have formed a member) was postponed, in consequence of the inability to obtain passports from Pekin, his Excellency most cordially placed him on special duty, with a view to the publication of the present work; thus giving him full leisure to devote to the completion of his researches, and to the progress of the book through the press.

The sanction likewise given him to prosecute his scientific enquiries, in any quarter, has been the means of increasing our knowledge of the geographic distribution of many Birds, and has also added several new species to the Indian Faunæ.

The author trusts that the many imperfections, some of them, perhaps, unavoidable, of the present publication, will be rectified hereafter; and he begs that these will be freely pointed out to him, by the many observers now in India, with a view to their rectification in a Supplement, or, it may be, in a future edition. He trusts, if his present leisure for scientific pursuits be continued, to be able to add greatly to our knowledge of the geographic distribution of the birds, and of the natural history, generally, of these provinces. On sufficient materials being available, he will, at once, issue a Supplement.

The 2nd volume is in the Press, and will be published as soon as possible.

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LIST OF ERRATA AND CORRIGENDA IN VOL. I.

Page 16.—Transpose the specific names of the two species of *Sarcoramphus.*

„ 66.—Line 17th, for *kinds* read *birds.*

„ 85.— „ 33rd, for 27 read 67.

„ 95.— „ 3rd, erase—*found over all the World.*

„ 114.— „ 15th, for *Australia* read *New Zealand.*

„ 136.— „ 33rd, for *puscalars* read *scapulars.*

„ 139.— „ 11th, for *Tennant,* read *Pennant.*

„ 188.— „ 17th, for *these groups* read *this group.*

„ 190.— „ 2nd, for *Batrochostomus* read *Batrachostomus.*

„ 200.— „ 33rd, for *without cœca* read, *with large cœca.*

„ 202.—Folio line for INIDA read INDIA.

„ 204.—Line 16th, for *short heart-shaped,* read *longish.*

„ 226.—I made a mistake in asserting that Strickland considered the Smyrna bird to be distinct from the Indian one. They are identical.

„ 252.—*Buceros Tickelli* does not belong to *Berenicornis,* but to *Anorhinus.*

„ 357.—Line 32nd, for *Troidæ,* read *Trochilidæ.*

„ „ — „ 34th, for *half* read *with.*

„ 410.— „ 16th, Heading No. 265 for **Tephodornis** read **Tephrodornis.**

„ 414.— „ 13th, after *to* insert *belong to.*

„ 430.— „ 15th, for *mezorhynchus,* read *megarhynchus.*

INTRODUCTION.

Class AVES—Birds.

Vertebrate, warm-blooded, oviparous animals, breathing by lungs, the heart with two ventricles and two auricles; the anterior limbs changed into wings; body clad with feathers; bill covered with a horny substance.

Birds being intended for flight, or progression through a thin and but slightly resisting medium, have their whole organization specially directed for this purpose. They are seldom of large size. The bulk of their body is greatly increased by their thick covering of feathers, of the lightest specific gravity, and it is rendered still lighter by many of the bones being hollow. The muscles that move the wings, which are the greatly lengthened anterior extremities, thickly furnished with strong and unyielding plumes, are of great power; and the sternum to which these muscles are attached is highly developed; whilst, at the same time, their respiratory function is vastly increased by the admission of the external air, not only to their lungs, but to air-cells in various parts of the body, and even in the bones, by which means the aeration of the blood is vastly accelerated, the blood raised to a higher temperature than in Mammals, and, consequently, the muscular power and excitability is greatly increased.

The bill or beak of Birds consists of the upper mandible, or maxilla of some, and the lower one or mandible. In the upper one we find the nares, or nostrils, of various form, and covered, or not, by hair, or hair-like feathers, and sometimes pierced in the hard substance of the bill

or in a soft membrane. The base of the bill is in some birds covered by a membrane, the cere, in which the nostrils are pierced. The upper edge of the bill is called the culmen, or keel, or ridge; and the corresponding ridge of the lower mandible, the gonys. The two edges that meet are the margins, and the line of their meeting is the commissure, or gape, which is sometimes overhung by rictal bristles or vibrissæ, of various degrees of strength, which assist occasionally in holding insect prey. The margin of the upper mandible is frequently notched, or toothed near the tip, and, in some cases, is serrated so as to represent teeth, which are totally wanting in birds. Some tubercles, resembling teeth, have been found in the fœtus of Parrots, and the horny laminæ in the margin of the bill have distinct pulps, like teeth; and these are the nearest approach to those organs in the class of Birds.

Feathers consist of the quill, the shaft, and the vane or web; the last composed of barbs which are themselves furnished with barbules, some of which are also provided with hooked microscopic hairs, which interlock with those of the next and hold them together. They may be divided into clothing feathers, and those subservient to locomotion, the feathers of the wings and tail. In many groups of birds the clothing feathers are furnished with an accessory plume fixed to the inner surface of the shaft. This is developed to the extreme in Emeus, so that two feathers appear to be growing from the same root, and in the Cassowary there is a trace of a third shaft in addition. In other birds it is reduced to a small tuft of down.

In some parts of the body, as over the nares, above the gape, over the eye in a few birds, and in others, on the nape and throat, certain feathers are reduced to mere bristles or hairs of greater or less, strength; but that these are

merely barbless feathers is shewn by their being shed and renewed along with the other feathers.

The quill is fixed in a tube formed by a fold of skin. A reproduction of feathers takes place annually at the so-called moult. The new feather is formed in a vesicle which perforates the skin as a horny case or sheath, and finally gives passage to the vane of the new feather, the part first formed. As the development of the feathers goes on, the sheath is resolved into scales or plates which fall off, or are removed by the bird. The shaft is originally double, hence the groove we see, and is formed after the quill. The shrivelled-up membrane in the quill is the remnant of the fluid in which the feather was formed. Some incomplete downy feathers secrete a powdery substance, the remains of the unfinished shaft, as in Herons, some Birds of prey, and Parrots, and this is usually either white or yellow. This is, of course, developed in greatest quantity at the time of the moult.

The moult of birds appears, like the shedding of the horns of Stags, to have some connection with the sexual functions. Most birds renew their plumage once a year only, in autumn, after the season of pairing and incubation. Certain families and tribes have a second or spring moult, which takes place just before the pairing, and is, in almost all cases, a change to a more gaudy or showy plumage, and in many cases an addition of ornamental tufts or plumes takes place at this season. The bill of some Herons, and of a few others also, undergoes a change of colour at this time. Some birds, in spring, undergo an actual change of color in certain of the feathers, unaccompanied by any moult, and, in others, a change of color takes place simply by the terminal portion of the feather being cast or worn off, and showing the brighter tint of

the base of the feather. In certain cases two or more of these modes, by which a seasonal alteration is effected, take place in the same individual. In some birds, which assume a partially black colour, at the spring moult, so great is the energy of the system in this coloration, that even old feathers about to be shed are sometimes coloured black. In all these cases the ordinary or winter plumage is re-assumed at the autumn moult; and in some of these cases where the change takes place in the feather itself without a renewal, the summer colour is re-absorbed wholly or partially before the moult. This absorption of color is also observed in some of the additional tufts put forth at the spring moult, which sometimes change to the winter colour before they have had time to drop off, as I have observed in the ear-tufts of the Lesser Florikin, Otis aurita. In a few cases a spring moult takes place, which is not accompanied by any change of colour except such as is due to a fresher plumage.

Some birds retain their entire nestling plumage till the second autumn. Others renew every feather at the first or autumn moult; and others change their nestling clothing plumage only, the first autumn, retaining their nestling primaries till the second autumn; and in no case are the primary quill feathers ever shed except in the autumn moult.

In many birds the female differs from the male by having a less bright plumage, or a different shade of colour; and in these the young birds generally resemble the female. In those exceptional cases where the female is the brighter coloured of the two, the young resemble the male bird. When the adult male and female are alike in plumage, the young, in some cases, resemble the parents, in others have a peculiar livery.

Old and barren hen-birds not unfrequently assume the plumage of the cock-bird; and emasculated males, in a few cases, have adopted the plumage of the hen-bird.

The feathers of the wing are divided into coverts, quills, and scapulars. The wing-coverts, 'tertrices,' are certain ranges of small feathers covering the base of the quills, and are divided into those that cover the shoulder, or the lesser coverts, the 'least' of some; the median or middle coverts 'lesser' of some; and the greater coverts; these are sometimes of different colors, and are named according to the quills which they impend, as primary coverts, secondary coverts, &c.

The quills (remiges) are divided into primaries, secondaries, and tertiaries. The primary quills are the most external, and are attached to the carpus. They are usually ten in number, but vary from nine to eleven, and are the largest and most important in flight.

The secondaries are inserted in the fore-arm, or ulna, and are usually only half the length of the primaries; and the tertiaries or tertials take their origin in the humerus, and are generally weaker than the secondaries. Cuvier erroneously calls them scapularies, but these last grow from the scapula; and though in some cases they are exceedingly similar, and appear to pass insensibly into the tertiaries which they overlie, in others they differ in form and color, and are occasionally much longer than the others.

Adjoining the greater coverts and protecting the base of the outermost quills, are certain small feathers placed in a series, of which the largest are the outermost. They are attached to the bone representing the index finger of the hand, and are called the winglet, or spurious, or bastard wing (alula). The feathers, of which there are usually

ten, are stiff, and they serve to strengthen the base of the outer primaries.

The tail-feathers (rectrices) are usually twelve in number, ten in several families, fourteen in some vultures, eighteen in many Gallinaceæ, and in some few as many as twenty-two. They are totally wanting in a very few; some have only six, and one genus eight. The two central tail feathers are called the Uropygials, and they are inserted slightly above the base of the others. They are occasionally moulted twice, whilst the others are, in no instance, moulted more than once a year. Above and below the rectrices, are some feathers of rather a loose structure, called, respectively, the upper and lower tail-coverts. The last are very frequently peculiarly coloured, as is conspicuous in Bulbuls and others.

The various regions of the body of birds are named; those above, the forehead, crown, sinciput, occiput, nape, neck; back or interscapular region, the lower back and rump; and the under parts are the chin, throat, neck, breast, abdomen or belly, and the vent. The body feathers of birds are named from their position, as frontal, coronal, occipital, nuchal, dorsal, interscapulary, &c., which together form a continuous series. Those in front of the eye are termed loreal, the lores being the space between the eye and the bill. Those covering the ears are called the ear-coverts or auriculars, and these are often distinct in appearance and colour from the adjacent feathers, and are loose and open in their structure.

The feathers of the cheek are those which lie between the gape and the ears. The sides of the neck and the middle of the breast and abdominal region are either naked, or covered with down only; and this last disappears in females at the season of incubation. There are also

various accessory tufts or plumes in different genera, as crests, ear-tufts, trains, breast plumes, and axillaries, which last are those situated at the base of the wing internally.

The leg is composed of what is popularly called the thigh, but which is really the tibia; (and this is either feathered to the knee, tarsus, or bare for a short space above, as in the order Grallatores); the tarsus, or shank, the leg popularly; and the foot. The tarsus is feathered in some birds, such as Eagles, some Owls, Grouse, some Swallows, &c.; but is bare in most, and is protected by horny scales, of which, anteriorly, there is either one undivided or several scutæ; lateral scales are not always present; and the posterior scales are either entire or variously divided. The foot consists in most cases of three toes in front, and one behind, the hallux. This last, sometimes called the thumb, is not anatomically the representative of that digit, which only appears in a few birds in the shape of a tarsal spur, but is so called because it is antagonistic in its uses to the front toes. It is sometimes deficient, as in Bustards, Plovers, Bustard-quails, and in others is reduced to a mere rudiment placed above the level of the other toes. The Ostrich has only two toes. The number of articulations of the toes is two in the hallux, three in the inner toe, four in the middle, and five in the outer one. There are a few exceptions to this, the true Swifts having only two joints in all their toes.

The upper surface of the toes, acropodia of some, are protected by scales, and are all terminated by horny claws of various size and curvature. In some birds, the Swifts, and the Colies perhaps, the hallux is capable of being directed forwards; in others, Caprimulgidæ, it is directed inwards. In the Scansores and some of the

Fissirostres, and in some Owls, the outer toe is directed backwards; in some it is disposed laterally, as in Musophagidæ and the Puff-birds; whilst in one family only, the Trogons, the inner lateral toe is disposed backwards. A membrane connects the base of the front toes in most birds of prey, in some Gallinaceæ, and in many of the Grallatores; and, in the Swimming-birds, is developed to the end of the anterior toes in many, and in a few even the hallux is united to the inner toe by a web. In many, the outer toe is usually joined to the middle toe by the whole of the first joint, and in some birds these digits are joined for a great portion of their length, and which are hence called syndactyle.

After these remarks on the external anatomy of Birds, a short account of their internal anatomy may be usefully added.

The cranium is early anchylosed, and is joined to the first cervical vertebræ by an unpaired articular tubercle. The greater part of the upper jaw is formed by the intermaxillary bones; it is slightly moveable, though not so freely as the lower jaw. The connection between these bones and the skull takes place through some elastic laminæ above, and internally by means of a moveable tympanic bone, the os quadratum, which represents the drum of the ear.

The cervical vertebræ vary greatly in their length as well as in their number, which vary from nine to twenty-three (in the Swans only), the usual number being from ten to fifteen. The neck, when long, is peculiarly flexible, capable not only of being bent forwards to the ground, but of being doubled backwards when at rest. The trunk, on the contrary, requiring great solidity to serve as a fulcrum for the action of the wings, the dorsal vertebræ are im-

moveably anchylosed, as are the lumbar and sacral vertebræ. The caudal vertebræ are moveable, and the last vertebra is in the form of a compressed disk, to support the tail; and this bone sometimes differs in form, according to the sex, as in the Pea-fowl.

The pelvis is much extended longitudinally, and is also anchylosed with the vertebral column, and thus affords a large surface for the attachment of the muscles which support the trunk upon the thighs. The iliac bones are long, and excavated internally to receive the kidneys. The ischia and the pubic bones are widened in their span, for the development and expulsion of the eggs, and the latter bones are not joined together.

The sternum, to which are attached the powerful muscles that move the wings, is of great extent, in general covering not only the thoracic but the abdominal cavity. Its extent too is increased by a central ridge or crest, or keel, which is of greater or less depth, according to the powers of flight. The posterior surface originally formed of two forked lateral processes, varies greatly according to the greater or less ossification of the notches between these processes. In some, the spaces are entirely filled up, or only occupied by one or two foramina, as in most diurnal birds of prey, Swifts, Humming-birds, Parrots, Petrels, &c., and in these birds the power of flight is at its maximum. In others the notches remain, and are of greater or less extent both in length and width according to the tribes. The ribs are joined to the sternum by bone, instead of by cartilage, to increase the strength of the chest; and to each rib a small appendage or bone is solidly attached, directed upwards and backwards over the succeeding rib, thus concurring to give additional solidity and strength.

The anterior extremities are composed as follows: The clavicles unite to form the furcula or merry-thought bone; and are joined to the sternum by ligament or cartilage. They are entirely wanting in some birds, as in certain genera of Parrots, and in others are not joined, and are very short. The coracoid apophyses, or coracoid clavicles of some, which are always present, are attached to the edge of the sternum, and, with the scapula, form the articular surface for the head of the humerus. The strength and width of the furcula, which serves to keep the shoulders apart, in opposition to the strong force exerted by the muscular action of the wings in flight, in general corresponds with the power of flight of the bird; but Parrots are an exception, for their clavicles are flat and comparatively weak. The fore-arm consists of the ulna and radius, the latter thin and feeble. The hand is elongated, and consists of two short carpal bones, two metacarpal bones, one complete digit, and the rudiments of two others; besides the so-called thumb, a styliform process of two phalanges. This, however, as in the case of the foot, does not represent the true thumb, but the index finger; and as we found the true thumb of the foot sometimes represented by a spur, so is the true thumb of the hand occasionally represented by a spur, as in some Plovers, Parra, Plectropterus, and more especially in the Chauna chavaria of South America.

The leg bones consist of a short femur, always directed forwards; a long tibia, with an imperfect fibula anchylosed to it; a patella; an anchylosed tarso-metatarsal bone (the tarsus); and the toes, already treated of in the external anatomy of the Bird.

Arboreal birds, which perch and roost on trees, do so without the exertion of any muscular force. A suite of

muscles, that proceed from the pelvis, pass over the knee and the heel, and are inserted into the ends of the toes, so that the simple weight of the body, bending the knee-joint stretches the muscles and their tendons, and flexes the toes.

The cutaneous muscles are strongly developed, and are divided into distinct parcels. The great bulk and strength of the pectoral muscles of most Birds has been already alluded to.

The digestion of Birds is in proportion to the energy of their vitality and the amount of respiration. Salivary glands exist in many, and in some, the edible-nest-producing Swifts, are developed enormously. The œsophagus, in many birds, is dilated into a crop or craw, which in the Parrots and Pigeons, the most exclusively vegetable feeders, is furnished with numerous glands, which become developed in both sexes during the period of incubation, and secrete a milky fluid with which the young are nourished at first. The craw is usually single, and on the right side only, but in Pigeons it is double. In most birds it simply serves as a reservoir for food hastily taken, and which cannot be at once received into the stomach; but the grain is usually moistened there and softened. The stomach of birds is double. The first, or proventriculus is a membranous stomach furnished with a multitude of glands, variously disposed and shaped in different groups, the secretion from which softens and otherwise acts on the aliment. In some birds, as the Grebes, there is a contraction and intervening space between this and the gizzard, and in one remarkable genus, Opisthocomus, this is developed into a large cavity. In other birds, there is no appreciable difference between the proventriculus and gizzard, which is usually very muscular, and in many (as in the Gallinaceæ) enormously thick, being formed of

two powerful muscles, united by two radiating tendons, and lined by a coating of cartilaginous structure. This is chiefly the structure in granivorous birds; for in those that subsist on fish or animal food, the muscular coat is thin, and every gradation is observable. Granivorous birds, and occasionally others, often swallow bits of gravel and other hard substances, apparently with a view to increase the triturating power of the gizzard. A supplementary stomach, or accessory pouch, is found near the pyloric orifice in some birds.

The intestinal canal, wide at first where the gall-ducts and pancreatic ducts open, forms a few curvatures, and passes into the great intestine, which ends in a large expansion, the cloaca. This is a pouch in which the rectum, the ureters, the spermatic ducts in the male, and the oviduct in the female, all terminate. It opens externally by the anus. As a general rule, the intestinal canal is much shorter than in mammals, averaging from three to five times the length of the body. Two small cœca are found in the majority of perching birds just at the commencement of the great intestines. These are absent entirely in some tribes, and are of considerable size in others; and these differences cannot be satisfactorily explained with reference to the food and habits of the birds. The fœces in most are enveloped in a thin pellicle.

The liver is large and bilobed, and a gall bladder is present in most birds, but absent in a few tribes. The pancreas is large and the spleen small. The kidneys are large, soft, and convoluted. The urine itself is thick, pultaceous and white, and is, in general, not voided by itself, but mixed with the fæces. Two bodies, called the succenturiate kidneys, are found in most birds under the anterior part of the two kidneys. They are of a yellow

or orange colour, and, in some birds, become larger in the pairing season; but their use is not fully ascertained.

The testes lie in front of the kidneys, that of the left side being usually the largest. They are greatly developed in size at the pairing season. Most birds have no penis; the Ostrich and a few water birds being the only exceptions. Only one ovary and oviduct is developed, generally that on the left side; and, when the two are present, the right one is much the smaller of the two. The ovary lies on the anterior and inner side of the kidney, and is flat, with transverse folds in which the eggs are formed. On escaping from the ovary, the egg is received by the oviduct, which is wide at first, then narrow and tortuous, with longitudinal folds where the white is secreted. A wider part then succeeds, where the egg remains some time, and the shell is secreted. This is considered analogous to the uterus; and the succeeding portion, opening into the cloaca, to the vagina. In a very few birds there is a clitoris present in the cloaca.

External sexual differences are more marked in Birds than in any other vertebrate animals, the males being almost universally the more highly coloured of the two. Exceptions occur in Rhynchœa, (the painted Snirpe) and in some species of the little Bustard-quail, Ortygis. As a general rule, the male is somewhat the larger of the two; but Birds of prey are an exception, the females in this order being much larger than the males, the difference between the sexes being much greater than in most cases where the male is the larger bird. A few other birds, viz., the Leek, or lesser Florikin, the Woodcock, some of the genus Turnix, Hydrophasianus, and others, exhibit the same peculiarity; and this appears to be more an individual feature, than one belonging to a family or even a genus,

for in the great Bustard of India, Otis nigriceps, the male is, at least, a third larger than the female, and the difference between the sexes of the Woodcock does not extend to the Snipe.

The heart has two distinct chambers. Arterial plexuses are often present in various parts of the system. The lungs are undivided, and are attached to the ribs and the dorsal vertebræ. The enveloping membrane is pierced with large holes, communicating with apertures in the bronchial tubes, through which the air inspired passes into large air-sacs in the thorax and abdomen, and even into the interior of many of the bones. In the Hornbills, the very phalanges of the toes are hollow, and communicate with the lungs. The oxygen of the air is thus brought into contact, not only with the sub-divisions of the pulmonary artery, but with those of the aortic system. A high and rapid aeration of the blood is thus maintained, and the great energy and irritability of the muscular system of Birds is a direct consequence of this amount of respiration. The trachea, long in all, forms curvatures in some within the sternum, in the male only or in both sexes ; and one or two expansions of the middle portion of the trachea occur in a few birds. The rings of the trachea are entire.

The organ of voice is situate at the bifurcation of the bronchi, or above it. At the bifurcation is a glottis, furnished, in singing birds, with several sets of peculiar muscles, and named by some the lower larynx. The true or upper larynx has very little to do with the production of the voice. Where there is only one pair of muscles, the voice is not capable of inflection ; and some few birds want even these, and are perfectly dumb. Those birds that have an extensive musical scale are able to shorten the tracheal tube, the

rings being thin, and the membranes large and contractile. The great volume of air, contained in the large air-cavities, contributes much to the strength of the voice.

The brain is large, often indeed proportionally larger than in Mammals ; and has a larger mass than the spinal marrow. The hemispheres of the cerebrum are without convolutions ; but the lateral ventricles and corpora striata are large. There is only a rudimentary corpus cullosum connecting the two hemispheres, but no pons varolii. The olefactory tubercles are situate beneath the front of the hemispheres. The cerebellum is almost without lateral lobes; being chiefly formed by the central lobe or vermiform process. The spinal cord has two enlargements, corresponding to the origin of the extremities. The cerebral nerves are the same as in Mammals.

The sense of sight in Birds is very perfect and highly developed. The bony orbits are of great magnitude, and the eye is proportionally large, and placed laterally on the head. It is composed of two unequal segments; the smallest being the anterior, and at the junction of the two there is a bony ring of usually fourteen to fifteen bony plates lodged in the front of the sclerotic membrane. The crystalline lens is usually rather flat, but more convex in those birds which do not require long vision. In certain birds, such as Eagles, Vultures, Falcons, &c., some muscles are attached from the bony ring to the cornea, and by their contraction, the convexity of the cornea is increased so that the eye can readily adapt itself to the great differences in the reach of their vision, and they can thus equally distinguish a small object when soaring high in mid-air, and the same object when they have descended upon it ; or, as in the case of Penguins and other water-

birds, are thus enabled to see equally well in the different media of air and water.

The marsupium, a plaited and vascular membrane, extending from the retina to the edge of the lens, is supposed, by some, to assist in this focal adjustment; by others it is considered to be simply a nervous prolongation intended to increase the extent of the visual surface. The pupil is always round. The iris is usually narrow, and often highly coloured. Certain colours prevail in certain tribes or families; such as dark-brown in the Falcons, yellow in the Hawks; but colour is not constant even in different species of the same genus. There are two horizontal eyelids, the lower of which is the largest and most moveable, only a few birds being able to depress the upper eyelid to any extent, viz. Owls and Caprimulgidæ. There is a third, or vertical, eyelid called the nyctitating membrane. This is fixed in the inner canthus of the eye, and is semi-transparent, being a fold of the Tunica conjunctiva, and can be drawn like a curtain over the front of the eye. Very few birds possess eyelashes, only Hornbills, some Cuckoos, a few Parrots, Ostriches &c.

Hearing is sufficiently acute in all birds, and is highly developed in Owls, in which the auditory aperture is often immense, and, in some species, is also furnished with an external conch. There is only one auditory ossicle, which connects the drum, or membranum tympani, with the fenestra ovalis; and the cavities communicate with each other through the air-cells of the skull. The external aperture is usually covered by comparatively loosely-barbed feathers, as has been already alluded to. The Eustachian tubes terminate in a common opening on the palate.

The sense of smell is also highly developed. The posterior nares unite to form a single cleft in the palatal

arch; and there are two or three pairs of bony or cartilaginous plates, by which the pituitary membrane is extended. The nasal fossæ are concealed within the base of the bill, but have no sinuses. The external opening varies greatly in size, form, and in the degree in which it is covered by membrane, hairs, or feathers; but the relation between the degree of nudity, or otherwise, of the nostrils, and the delicacy of the sense of smell, is by no means evident. The great power of smell supposed to exist in Vultures has certainly been greatly exaggerated. Waders have probably this sense most developed, and Gallinaceous birds the least.

Taste is but little developed in most birds, the bill being thin and horny, and most birds swallow their food without masticating it. In Parrots and Ducks the tongue is thick and fleshy, and there is no doubt that these birds have the sense of taste, and do distinguish and select their food accordingly. In some, with the usual horny tongue, the tip is entire; in others it is more or less bifid; and in some it is provided with a brush of hairs, which enables them to sip the honey, and brush off the pollen of flowers. In others, again, it is long and tubular, and in some it is provided with a barbed end, or spear, to secure insects. The hyoid bone is greatly developed in Wood-peckers, passing over the whole extent of the cranium, and, by a peculiar apparatus, enabling the tongue to be protruded to a great length. This is simply the attachment of certain muscles from the lower jaw to the posterior part of the crura of the hyoid bone, the contraction of which pulls down the bone, and thus forces out the tongue.

The sense of touch or feeling is but little developed, except perhaps in the bill of Ducks, and of some Grallatores, especially of Snipe and their allies.

A peculiar gland exists in most birds under the skin on the upper part of the tail bone, secreting an oily matter with which birds smear or preen their feathers to prevent them from getting wet, and it is therefore most developed in water birds.

Most birds are monogamous, a few, chiefly among the Gallinaceæ, being polygamous, and the males of these are very pugnacious, especially at the breeding season. The continuation of the species is effected by eggs, which are either laid in nests, or simply on the ground. Some nests are beautifully and most artificially made, as in the Weaver birds, the Tailor birds, Honeysuckers, Orioles, &c.; and are sometimes lined with feathers, or other soft materials, but less so, in hot countries, than in cold or temperate climes. Others are simply made of a few sticks and roots; in a few families with mud agglutinated by saliva; and some, (the Collocaliæ) construct their nests almost entirely of inspissated saliva. Many birds nidificate in holes of trees, some in holes in banks, or in clefts of rocks, and others on the ground. Most birds make their nests solitary. A good many, however, such as some Swallows and Swifts, Bee-eaters, Weaver birds, and others, build in company.

The eggs vary in number; few in birds of prey, numerous in Gallinaceæ and many in water-birds; moderate in most Insessores, though numerous in a very few genera. The colour is often uniform in certain families and tribes; white in Owls, Swifts, most Fissirostral birds, and in most of the Scansores; much mottled and variegated in most Grallatores and Natatores; blue in the Herons, and in many Thrushes, Accentor, true Cuckoos, &c., and variously spotted, and streaked in others. Most birds hatch their own eggs. The true Cuckoos deposit their eggs in the nests of other birds, and the Ostrich leaves her eggs

in the sand to be hatched by the heat of the sun. The Megapodidæ appear to lay their eggs in society. Most birds breed but once in the year. A few, chiefly among the Insessores, have two (or even more) broods; but in India, I think, fewer in proportion than in colder climates. The time of incubation varies pretty much according to size, the smallest eggs being the most quickly hatched. The males of many birds take their turn, in the office of incubation and feeding the young, with the females. These birds, during incubation, lose the feathers of the middle of the breast and abdomen, by which the warmth of their bodies is more fully communicated to the eggs.

In most of the Gallinaceæ, and many of the Grallatores and Natatores, the young on exclusion from the egg, are covered with down, run at once, and are capable of picking their own food. Others are hatched more or less naked, and perfectly helpless, and have to be fed by their parents for a longer or shorter period, even after they have left their nests and are able to fly. The young of some birds are furnished with a horny tip to the bill to enable them to break the shell, and this falls off afterwards. After exclusion from the egg, the young are diligently fed by both their parents, and quickly assume their first plumage, the feathers of the wings being early developed, by which they are enabled to leave the nest, if alarmed, before their full plumage is perfected. The fæces of the young of most of the Insessores is removed by the parents, and, being enclosed by a thin pellicle, can be taken up and thrown out without breaking; many birds are stated at first to swallow the fæces. In most Fissirostral birds and some others, the fæces have not this pellicle, and are left in the nest, as voided by the young. When able to fly,

the young continue to follow their parents for a period varying according to the family or tribe. In some cases, as in birds of prey, they are driven off early, as soon as fully able to provide for themselves. In others they remain till the pairing season approaches, when they are usually said to live in small flocks or families. Certain Ducks breed on cliffs and trees, often at a considerable distance from water, and they must carry their young to water, but this has not been observed.

Some Birds live a solitary life from the time of leaving their parents till the pairing season approaches. Others keep in pairs, in more or less close approximation; whilst many keep together, the young brood with the parents throughout the winter, and some in larger flocks, of two or more broods together. Some, as the *Timalinæ*, are even more or less social during the breeding season. Many birds, more especially the grain and fruit eaters among Insessores, and various game birds, waders and water-birds, associate during the winter in vast flocks. Among these are various Crows, Starlings, Finches, Larks, and Parrots, of the Insessorial order, and a very few Thrushes; whilst among other orders, Pigeons, Rock pigeons (Pteroclidæ), and various water-fowl, such as Cranes, Ducks, Flamingoes, and Pelicans, are conspicuous. Several, that do not feed in large flocks, yet congregate together towards evening, and roost together, such as Mynas, some Herons, Crows, and other birds; and, in the morning, they separate into small parties, and go off to their feeding grounds.

The food of birds is as varied as their structure. Birds of prey live on animal food, of various classes, killed by themselves, or on the carcases of animals. The greater number ofthe Dentirostres, most of the Fissirostres, and some of the Scansores and Tenuirostres, live on insect food, whilst the

remainder of these tribes live on fruit; and most of the Conirostres on grain, as well as partially on fruit and insects. The more typical of the Tenuirostral tribe live on honey, as also on small insects and spiders, and some on flower-buds; whilst the Honey-eaters of Australia eat both honey and pollen. The Water-birds live chiefly on shells, slugs, and various aquatic insects, with fish and frogs; a few on seeds, buds, and vegetable substances. A few graze on young grass or grain. Most birds seek their food by day; a few by night, and these have a remakably soft and dingy plumage. Many birds drink habitually, others do not. Birds of prey in confinement will usually drink, but they do not appear always to do so. Most perchers, except some of the Fissirostres and Scansores, drink, as do all Game birds and Pigeons; whilst most Waders and water-birds take in with their usual food sufficient water to serve them.

The general intelligence of birds cannot be said to rank high, though their powers of instinct are unequalled. The Crows, as a family, are considered by some, and perhaps with justice, as the most perfect and intelligent of birds, but they neither recognise the egg of the Cuckoo when deposited in their own nest, nor the difference between the young Cuckoo and their own offspring. Some naturalists look on Parrots as the most perfect of birds, and they do èxhibit certain signs of intelligence; but their whole habits and inferior instincts rank them, in my opinion, much below many other Insessorial birds. Many birds evince great intelligence in avoiding dangers, and also in the way in which they obtain their food; but, still, their chief actions are guided by instinct rather than intelligence; and many birds are remarkably stupid. Birds possess imagination, for they dream; and memory, for

they will return to the spot where they are fed. They also can be taught to repeat certain words and sentences, and even songs.

The migrations of birds are among the most remarkable effects of their instincts; and the cause thereof has given rise to numerous speculations. It appears to me that the want or scarcity of food, together with the decline of temperature, are the chief causes that impel most migratory (and perhaps all our Wading and Water-birds) from the northern regions where they breed, to the more genial climate of the winter of the Tropics; and it is the ever-continued flow onwards of the birds from the North that impel so many to the extreme South. Were it not for this continued stream from the North, many would stop far short of the usual extent of their wanderings south. The Northward migration, however, is dependent on another cause; *viz.*, the rapid enlargement of the sexual organs in spring, causing the wish of returning to their homes (for such their birth-place must be considered), for the purpose of breeding; and this appears to become a most powerful and irrestrainable impulse, even birds in confinement and incapable of flight, showing great uneasiness at this time. Why such birds as the Cuckoo, immediately after her eggs are laid, and the male perhaps before that, should proceed to the south, is a more difficult problem. Cuvier's explanation of the cause of migration being dependent on the sensibility of birds to the variations of the atmosphere to an extent of which we can have no idea, no more affords an efficient cause for this, than for that of migration in general.

In India we have several variations in the time of arrival and departure of migratory birds. In lower Bengal the Kites quit Calcutta and its vicinity during

the rains, appearing again in the cold weather. It is not known exactly where they go to, but when at Dacca, towards the end of May, I saw a vast flock proceeding in a North-east direction one evening, and, long after dark, they were still passing over. I do not recollect noticing any diminution in the number of Kites at any season, in the South of India.

Some birds of prey, as the lesser Kestrel, the Baza and the Indian Hobby appear most frequently in lower Bengal during the rainy season. The Adjutants visit Calcutta during the rains, leaving in the cold weather. Bee-eaters quit certain parts of the country during the hot season for the purpose of breeding, returning before the conclusion of the rains; and a few other birds appear to leave some districts for a time, for the same purpose. The vast majority however of the true migratory birds are cold weather visitants, coming in during September and October, and leaving from the end of March to May. The Peregrine Falcon, the true Hobby, the Kestrel, the English Sparrowhawk, all our Harriers, the Short-eared Owl, are all true migratory birds. Among the Insessores the Wagtails, some of the Pipits and Larks, Stonechats, several Warblers and Thrushes, Buntings and Rose Finches, are the chief groups among which migratory birds occur. The Shrike, the Hoopoe and two Starlings, and a very few others, are also among the migratory insessorial birds. The European Quail is the only real migratory bird among the Gallinaceæ, and even it is said to breed in small numbers in some parts of the north of India; but some of the other Quails, and Bustard-quails, and the Pteroclidæ, wander about to different localities. Among the Grallatores some Cranes and Storks, and the great majority of the *Scolopacidæ*, breed in the north, and come to India during

the winter ; and so do four-fifths of the Ducks that visit us at the same season. Several others among the waders and water-birds leave certain districts for the purpose of breeding, *e. g.*, Otis aurita, Ardea bubulcus, some of the Rails, Terns, Gulls, and others ; and a few birds also wander about, apparently to procure their food with more facility.

Migrating birds often return regularly to the same spot year after year, and even in many cases to the same nest which they have previously occupied. The wonderful instinct by which many birds, carried to a distance from their homes, travel straight back again, is well known, as exemplified by carrier-pigeons and other birds.

The song of birds is, as a general rule, the expression of their delight at the season of pairing, and is chiefly heard at that time; though, in an artificial state, by high feeding and warmth, it is often continued through the year, and by some few birds, more or less so even in the wild state. The chief families among whom this charming faculty is developed most are the Merulidæ, Saxicolinæ, Sylviadæ, Larks, and some Finches. A few Shrikes and Flycatchers, and some Starlings have also pretty songs. The female is believed in many cases to be attracted to her mate by his song, and the cock nightingales, and some other warblers, are said not to seek their mates, which repair to the spot whence the song proceeds. The call of the Cuckoo is probably for the same purpose. During the season of love the attitudes assumed by many birds are very remarkable, as in the case of the Cock Bustard of India, and the European Bustard; and the well known display by the Peacock of his magnificent train, and the seasonal plumage of the Ruff, of the male Leek Florikin, and of many other birds, are all intended to fascinate and attract the females. Many birds are very

quarrelsome, more especially at the season of pairing; and the males of polygamous birds are well known for their fighting propensities. In this country a fine breed of Cocks is kept for fighting, and Quails, Bulbuls, and other birds, are also frequently trained for that purpose. In some of the genus Turnix the hen birds are the most quarrelsome, as they are the largest and most richly colored of the two sexes.

Birds contribute to the gratification of man in other ways than by their charming song. Falcons and Hawks are trained to the chase of birds and even of animals; Pelicans and Cormorants to fish; and many others are tamed, and exhibit some peculiar habits, such as the Bayas, which will pick an ornament off the forehead of a sweet-heart, or recover a ring dropped down a well.

The ignorant and superstitious of most nations take many omens from the flight and actions of birds.

Before giving an account of the classification of birds, a few words on what a species and variety are considered to be, may not be out of place here.

A species may be defined as a number of individuals closely resembling one another in size, structure, and colors, and propagating a like race; or, it may be said to be the whole of those individuals that resemble each other so closely, as to lead us to conclude that they may have descended from a common origin. Some add to this that individuals of one species are incapable of producing a fertile offspring when crossed with individuals of another species; but late observations should make us cautious in accepting this character as fixed and unvarying.

A variety is considered by some, as one or more individuals resembling certain other individuals sufficiently to be considered identical in species, and yet differing in

certain external points of colour, size, or form; and these may, either, propagate individuals precisely like themselves, or revert to what is usually called the type form of the species. *Moreover they breed freely with one another*, and their offspring is always fertile. Among domesticated animals and plants, we are familiar with numerous varieties, as here defined; but, in nature, more especially in the animal kingdom, varieties are rare; any exceptionally abnormal forms produced are few in individuals, and rarely reproduced; and the variations of all species are bounded within certain fixed limits. In the vegetable world, however, where the plant is so much affected by external circumstances, such as soil, light, heat, supply of water, &c., no doubt varieties are much more frequent, and of greater divergency from the original type.

Some naturalists believe that permanent varieties are common in the animal kingdom, and Kaup calls them sub-species. Such persons consider that their differences from other individuals of what they would term the typical form, do not entitle them to the full rank of a species. Others, again, deny that permanent varieties exist, and state their conviction that even slight differences of colour and size, if found to be constant, are sufficient to constitute such individuals a distinct race or species. When such differences are found to co-exist with a different geographical distribution, I certainly prefer the views of those who look on all permanent distinctions of colour, size, structure, &c., as distinct species, and I believe that no change of climate, or food, or other external circumstances, will produce any alteration in them or in their descendants, if they remain true to each other; and as yet I know of no recorded instance where any well marked race has produced offspring differing from their

own, or tending to revert to a supposed original type. That various nearly affined species will propagate, inter se, and produce fertile offspring, I fully believe ; as in the cases of the green Pigeons of Bengal and of Southern India; in the Indian and the Burmese Rollers ; the small Cuckoos of S. India and those of Bengal; and in several other instances : but that this fact militates against their being species, and in favor of their being varieties, I think is not supported by many recent experiments in crossing. Of late years many species have been universally admitted, as such, which were formerly considered simple varieties, and, although, perhaps, the tendency of late writers has been to multiply species, in some cases most unnecessarily, yet in previous years the other extreme was taken, more especially by Schlegel and his followers. Our best naturalists and ornithologists now fully recognize the distinctness of permanent races. If varieties are once allowed, it depends on individual judgment or caprice to what extent they may be carried. In this country, where there are many very closely allied species, among genera characteristic of the country, many of the species of Malacocircus and Hœmatornis would be classed as simple varieties by some, whilst others would perhaps allow some of them, whose different notes they might have observed, to be distinct species; and the rest varieties. Lastly, it is, I think, more convenient in practice to give each race a distinct specific name, than to speak of them as Var. A. or Var. B. of such a species.

It is beyond the scope of the present introduction to enter into the question of the origin of affined species. They may, originally, have sprung from type species, as Darwin teaches, and remained permanent in such localities as suited them, and not in others; or, they may have at once

been created as distinct species, and their place on earth fixed for them. We rarely find one trespassing far on the limits of the other, but, where they do so meet, hybrids are not uncommon, but such hybrids do not appear to spread beyond the district where the two meet. As far as our brief experience goes, geographic distribution is against Mr. Darwin's Theory. To give one example, Malacocircus striatus of Ceylon is more allied to M. bengalensis of Bengal, than to M. malabaricus, which is spread throughout a vast region between those provinces. Other examples will occur to the Indian Ornithologist. In a vast province like India, we have numerous instances of very closely allied races or species, especially when we compare the birds of India proper with those of the countries to the East of the Bay of Bengal; and many representative species, as Mr. Blyth aptly calls them, are found in Northern and Southern India, and in the Burmese countries; in some cases, extending to a fourth race in Malayana.

Mr. Blyth has written a highly interesting paper on the variation of affined species, from which I extract the following remarks:—

Some species differ only in size, as the Golden Plovers of Europe, America and Australia, the Cotton Teal, Netapus coromandelicus, and N. bicolor, respectively, of India and Australia; Buceros albirostris, and B. affinis; Alcedo ispida, and A. bengalensis, &c., &c.: or, with exact similarity of size and proportion, they may differ more or less in colour, as the different species of Asiatic Treron (Green Pigeons with yellow feet), *e. g.*, T. phænicoptera, of Bengal and upper India, T. chlorigaster, of S. India and Ceylon, and T. viridifrons, of Burmah; also the species or races of black-headed Munia, as M. sinensis, of the Malayan Peninsula,

M. rubronigra of Bengal and Tenasserim, and M. malacca, of S. India and Ceylon; and very many others. Such differences may be very slight indeed, and yet constant. In several such cases where the sexes differ, the adult males only can be, distinguished, as exemplified by Thamnobia Cambayensis of Northern India, and T. fulicata of S. India and Ceylon ; also, by some of the long-tailed Nectariniæ, and by certain of the Kalij pheasants. Or, only the older males may assume a distinguishing mark, as in Lanius superciliosus of the Malayan countries, as compared with its representative in India. Or, perhaps, the old of both sexes may, alone, be distinguishable, as instanced by the amethystine Chrysococcyx xanthorhynchos of the Malayan countries, and its emerald-green Indian representative. Lastly, the nuptial plumage may, alone, present a constant diversity, which is very great in Motacilla alboides, and M. dukhunensis.

A constant variation of colour is often associated with a marked difference in the voice, as in Pratincola indica, compared with that of the European P. rubicola; and in others a structural peculiarity, in one sex only, is the chief point of difference, as in the remarkable case of the conformation of the trachea in the female Rhynchæa australis, or painted Snipe, entirely absent in both sexes of the Indian R. bengalensis.

It may next be remarked that a great difference of voice and of habits may be only indicated in the structure by minute variations in the form of particular feathers; *e. g.*, by the crest, as in Pernis cristata and Limnaetus cristatellus, compared with P. apivora and L. niveus, the latter of which, moreover, assumes an ultimate phase of plumage never seen in the other. In many other instances, the distinction is best shown in the varying relative

proportions of the wing primaries, or even in that of a single primary, as in Acrocephalus brunescens of India, compared with A. arundinaceus of Europe; or, in the relative sizes of the ear-tufts, as in Otocompsa jocosa of India and of Burmah ; or in the length of the lower tail-coverts, as in Irena puella and I. indica.

In many cases sundry of the foregoing differences are variously combined.

Classification may be said to be the grouping of objects according to their affinities, and their arrangement into divisions of various degrees of magnitude. Its object is to bring together those beings that most resemble each other, and to separate those that differ. By some it has been regarded simply as a convenient method of arrangement for shortening the labor of the naturalist, who, by its means, instead of studying all the characters which each specimen presents, is enabled, by knowing its general position, to confine his attention to a few of the minor details of structure. His labour is thus simplified by the union into one group of all the animals which agree in the most important and essential characters. The Philosophic naturalist has, however, a higher aim, and his object is to discover the natural system, in other words, to endeavour to develop the general plan on which the Creator has formed and arranged the numberless species of natural objects.

On comparing certain species with others, we find various degrees of resemblance of structure and general appearance. Those, which are nearest and most close, are called affinities, and the more distant resemblances, analogies ; and these are of every degree of nearness or remoteness. The affinities of species may be said to point out their order of succession in nature, and are easily

understood and appreciable. Not so, however, the analogies exhibited by many species and groups to others, perhaps very distantly related. These may be resemblances of structure, or of colour, or of habits. Some naturalists explain them by expressing their belief that in every group, great or small, there are certain types of structure, offering fixed characteristic marks, and that analogies are, simply, the representation in one group of a certain type in another; or, to put it in other words, that analogous groups or species simply occupy a corresponding place in their respective classes, orders, or families. This theory of representation has, perhaps, been carried out, to too great an extent, by certain writers, but, nevertheless, it appears to be founded on nature; and the existence of these, often unexpected, analogies between distant groups and species, clearly manifests the unity of the plan of the animal creation. According to Mr. Darwin's views, such analogies might be explained on the supposition that the resemblances were due to some remote ancestral origin.

The colours and markings of some birds appear to be repeated in other groups; and, in most natural divisions, great variety of form of bill, and also of other parts is exhibited, representing several distinct types; and, in some, more distantly related, groups, analogy is shown by habits, by the color of the eggs, by seasonal change of plumage, &c., &c. Many examples of analogy will be pointed out in the present work.

On beginning at any point in any series of beings, and tracing, step by step, the scale of affinities, we soon find that the supposed chain is interrupted, and that branches strike

* If his theory be ever traced out in detail, this subject may be the means of testing it thoroughly.

off in various directions. That a linear arrangement is quite impossible has long been conceded universally; but what directions the divergencies take, is not agreed on; nor, indeed, have Zoologists of the present day decided that there is a fixed plan for any one class, still less that the same system extends through all. Strickland, and quite recently, Wallace, have attempted to show the affinities of some families and orders of birds by means of diagrams.

Certain English Naturalists, and, simultaneously, one or more German Botanists, have maintained that, in arranging any series of animated beings, according to their affinities, the tendency is to revert to the point whence they set out, not indeed in an unbroken line, but in a series of circles. This, the circular system, as it has been termed, has been strained, perhaps, too far by its exponents, but there is no doubt that in many instances this tendency to a quasi-circular arrangement appears to exist in nature, and even Wallace's diagrams show this. It appears, however, according to some, that the affinities of the species of any group are various, and cannot be expressed by figures, every natural group and species being connected not with two only, but with several; and it is possible that any natural group, if we possessed all the forms which it comprised, would present links of transition towards all the other groups of the same family or order. Many examples might be given to show the tendency to a circular arrangement, but I shall content myself by pointing out to the student this supposed feature, to verify, or otherwise, in any group he may be studying. Many gaps of course occur in following the chain of affinities, some very great, others easily bridged over. These of course are stumbling blocks in the way of such as believe in a complete chain or circle; and the fossil remains of birds, hitherto discovered, have

not been sufficiently numerous to make these intervals much less.

That a special design is exhibited in creation there can, I think, be but little doubt. It is admitted by almost all, and most fully and unequivocally in the best known and most highly organized group, the Vertebrata; in all the classes of which a certain archetype of form is preserved, marked and recognizable, however disguised for special ends. It is surely more consonant to our ideas of a Creator to believe that he formed his numberless creatures with certain relations to each other, than to conceive that each was brought to life independently. Indeed, a follower of Darwin might fairly argue that the evidence of design is* as clearly shown by the theory of the transmutation of species, as by that of separate individual creation; but Darwin himself, perhaps, lays too much stress on external and fortuitous circumstances as producing varieties, and not enough on the inherent power of change, which, as he clearly shows, is now and then exhibited by various organic bodies.

That species were created at hap-hazard, without any reference to others, either of the same group, or more distant ones, is a doctrine so opposed to all the affinities and analogies observed throughout the animated world, that the mind refuses to accept it, and intuitively acknowledges the evidence of design.

That a certain system has been followed, if we allow design at all, must be admitted, but the exponent of the natural system has yet to appear. The tendency of the

* In the Introduction to Mammalia, a brief sketch of the Animal Kingdom will be given, and its division into sub-kingdoms, and classes, with a few general remarks on Classification.

present age is to accumulate facts, and not to generalize; but we have now a sufficiency of facts, and want our Lyell to explain them.

By the consent of most naturalists, all objects of nature are divided into kingdoms, sub-kingdoms, classes, orders, families, and genera, and, in some cases, where the families are numerous, tribes, sub-families, and sub-genera are added. Birds are a class of the sub-kingdom Vertebrata, of the Animal kingdom. The Orders of birds are founded chiefly on the form of the bill, and more especially of the feet. Families are characterized by more minute distinctions of the bill and feet, together with characters drawn from the wings, tail, and certain habits, more or less common to all. A Genus comprises one or many species closely resembling one another in the structure of bill, feet, wings, and tail, and in habits, yet differing, it may be, in color, size, or some minute differences of structure. To give a familiar example, the European Kite and the common Kite of India are species of the same genus, Milvus; and the English Kingfisher and the little Indian Kingfisher, are separate species of the same genus Alcedo, each of these genera containing several other species. Of late years genera have been greatly divided and multiplied, some of them being classed as sub-genera; but, in practice, and till the whole realm of Ornithology is presided over by a master hand, no distinction can be satisfactorily pointed out, or acted on. When the families of any order are very numerous, they are classed in tribes; and when the genera of any family are numerous, or comprise several distinct forms, they are grouped into sub-families.

In every natural assemblage of forms, whether it be genus, family, or order, there is some one form which pre-

sents the characters that are common to all, in a *more* remarkable and complete manner than the rest; and this is called the type of the group. Thus each genus has its typical species; each family its typical genus, and so on; the type being, in each instance, that form to which our minds naturally revert as best exhibiting the characters that belong to the entire group. Some are very close to the type, others differ from it to such a degree that we might have failed to recognise the connection, were it not from the presence of intermediate links. These are called aberrant forms.

It may be asked, are these divisions, which we have here indicated, natural, *i. e.* marked out by nature, or, in other words, designed? That some of them are so, we may, I think, safely infer from the example already quoted of the Vertebrata. Here we have at least four, some say five, great divisions marked out by nature so broadly that the distinctions are in most cases recognizable and patent to all; and, in each of these classes so clearly marked, there are certain divisions apparent even to the uninstructed; such for example, among birds, are the Birds of Prey, Owls, Finches, Game birds, Ducks, &c., &c. Many genera, too, are undoubtedly exceedingly natural and clearly defined; and, on the whole, I think, we may conclude that nature herself (could we but correctly read her lessons) has pointed out most of the divisions; or, in other words, has varied each group, small as well as great, in a certain and definite method. Many natural divisions however appear to grade into each other, and have no definite limits; yet, for purpose of study, we must assign limits and characters; and the affinities, by which they

* This subject will be mooted more at large in the Introduction to Mammalia.

are grouped, must be judged of by as many and as constant characters as possible, derived from all parts; but certain typical characters must be assigned.

Between 7,000 and 8,000 species of birds have been already described, and when all the true species have been discriminated, and the interior of Africa and Australia fully explored, we may expect a considerable increase. A few more may probably be discovered in India, and especially in Burmah, and the countries lying between this and China, but no very numerous additions can be expected from this Continent, nor indeed from America.

I shall now give a brief account of the Classification of birds into Orders, and the characters on which they are founded.

When we examine the form of the feet of birds, we are at once struck with the webbed feet of some, to which is generally added a backward position of the legs, and a thick, close-set plumage, impervious to water. Such are the characters of the water birds, the Anseres of Linnæus, the NATATORES of Vieillot, Swainson, and Vigors; and the Palmipedes of Willoughby, Cuvier, and Temminck, an order admitted by all.

We next find a certain number of birds with, in general, much elongated legs, bare above the knee, and a more or less slender shape. Many of them are found on the sea-shore, on the banks of rivers and lakes, or frequenting marshes or grassy plains. Such are the wading birds, the Grallæ of Linnæus, and Cuvier, the GRALLATORES of Vieillot, Vigors, Swainson, &c. These, however, have been sub-divided, the Pinnatifides, or Coots, being separated by some naturalists; and also the Cursores, confined to the Ostriches by certain Ornithologists, but, including the Bustards and Plovers, according to others.

These two orders, *viz.*, the Natatores and Grallatores, comprise the 'Water birds' of popular writers on Ornithology.

Still looking to the feet, we find a certain number of birds with the leg feathered to the tarsus, or beyond it, with the feet strong, the claws blunt, and with the hind toe (in most) very small, and above the plane of the others. Whilst, in the two last orders, there was a great variety in the form of the beak, here it is usually short, and vaulted, and the nostrils are covered by a soft tumid scale. The birds are plump and heavy with short wings, and the head small. When, to these characters, we add that a fifth rudimentary toe is frequently present, in the form of a spur, every one must see at once that the Game birds or Gallinaceous birds are intended. These are the Gallinæ of Linnæus and Cuvier, the Gallinacei of Vieillot, and the RASORES of Vigors and Swainson. In this, as well as in the last order, the hallux is occasionally wanting, and there is frequently a rudiment of a web between the anterior toes. From Gallinaceous birds most Ornithologists now separate the Pigeons, which differ from the true Rasores by their more perfect hind toe, on the same plane as the anterior toes, by their more slender and less vaulted beak, and also by the fact of their young being, when hatched, callow and helpless, instead of being feathered, and able to run, as in the true Game birds. This physiological difference, however, exists, also, both among the wading and swimming birds, which are not usually divided in consequence (although Bonaparte latterly did so); and the Pigeons are confessedly nearer to the Gallinaceæ than to any of the Insessorial birds. The Pigeons constitute the Columbæ of Willoughby and others, and the GEMITORES of Blyth, which I shall for convenience adopt as a sub-order,

though theoretically I consider them a subordinate type of the Rasores.

The remaining birds have the toes all upon the same plane, and the hallux is never wanting, though, in a few instances, the inner toe is deficient. Among them, some may be distinguished by their strong, curved, and often toothed bill, furnished with a cere, or naked membrane at the base; and by their strong feet, with generally curved, sharp, and, often, partially retractile talons. They are mostly of large size, and feed exclusively on animal diet. They constitute the Birds of prey of British authors, and are the Accipitres of Linnæus, the Rapaces of Illiger, and the RAPTORES of Vigors. Several of these birds have, still, a small web between their anterior toes.

The whole of the remaining birds, which are more numerous than all the others put together, are the Passerine birds of some, the Perching birds of others, the INSESSORES of Vigors. They are chiefly distinguishable from the previous orders by negative characters. They are, by many, divided into two or more sub-orders, *viz.*, into Picæ and Passeres by Linnæus; Scansores and Passeres by Cuvier; Volucres and Oscines by Bonaparte; into Scansores, Picæ, and Passeres by Blyth and by Temminck into seven orders, each equivalent to the previous five orders. As I consider that the differences, pointed out in these divisions by various naturalists, are not greater than those allowed in the other orders, and that, moreover, these lesser divisions would not be of equivalent value to those orders, I prefer retaining all under Insessores, as indeed most of our English writers have done.

Nearly in conformity, then, with Gray's 'List of Genera and Sub-genera of Birds,' and Horsfield's 'Catalogue of

Birds in the Museum, E. I. C.,' in the present work I shall classify birds in the following Orders :—

I. RAPTORES, Birds of Prey.
II. INSESSORES, Perching Birds.
III. GEMITORES, Pigeons.
IV. RASORES, Game Birds.
V. GRALLATORES, Wading Birds.
VI. NATATORES, Swimming Birds.

The Student will find the characters of these orders, and their division into tribes and families under their respective heads ; and I will here, simply, content myself with begging the reader to understand that it is most difficult to define accurately, or to generalize characters in this, as in other classes of animals ; the truth being, as before stated, that every great group contains within itself several distinct types.

A few words on the geographic divisions of the province to which I have restricted the "Birds of India," and for which I refer to the Prospectus. The country, to which the Ornithology of the following volumes is confined, may be conveniently divided into Northern, Central and Southern India. Northern India comprises Bengal proper, the North-west Provinces, the Punjab and Sindh, and the whole extent of the Himalayas, from Cashmere to Bootan. I exclude Assam, Sylhet, Tipperah and Chittagong, for, though most of the birds are identical, yet here commences the peculiar Indo-Chinese Fauna, which extends through Burmah to China, and Malayana.*

* I would have greatly liked to have included all British India, from Assam to Tenasserim and Ceylon, in the scope of the present work ; but I was afraid that this addition would have swelled my work to an unwieldy bulk. If, on the near completion of the 2nd volume, I find that it can be done without making too thick a volume, I will add a Supplement containing descriptions of all the species found in that tract of country, with reference to the pages where they should have come in due course.

Central India includes Nagpore, north of the Godavery, the valley of the Nerbudda, with Saugor and Mhow; Bundelcund, and the countries extending on the East towards Cuttack and Midnapore. In Southern India I distinguish Malabar, including Wynaad, Coorg, the whole extent of the Western Ghats, and the slopes of the Neilgherries; the Carnatic; the Northern Circars; and the Table land of Mysore, Bellary, and Hyderabad, as far as the Godavery.

Malabar is, throughout, a forest country; the Northern Circars and the Eastern part of Central India, and Eastern Bengal, are well wooded or jungly; and the Himalayas are clad with thick and lofty forest. The Carnatic and still more the Table land, the Western portion of Central India, Western Bengal, the N. W. Provinces, Punjab, and Sindh, are all more or less bare and denuded of forest; though patches of jungle occasionally occur, and the hilly parts are more or less wooded. In the Eastern parts of Bengal, tracts of gigantic grass jungle exist, unknown elsewhere, except, partially, on the banks of a few rivers.

Malabar, the Eastern Himalayas, Eastern Bengal, and the neighbouring districts of Central India, are respectively, and in the order here mentioned, the districts in which most rain falls; the Punjab and Sindh and parts of the Carnatic, and of the Table land, the driest provinces. The Punjab and N. W. Provinces are at once the hottest, and the coldest, climates in India. Southern India, from its vicinity to the Equator, is more uniformly warm than Central and Northern India, but, the sea breeze, extending its influence over the narrow continent, moderates the heat, and the excessive summer temperature of Northern and Central India is unknown in the South. Bengal, again, though nearly equally cold in winter with Central India,

from its moister climate, wants the parching hot winds of those provinces and of the North West.

Malabar, including the Neilgherries, possesses several species of birds unknown in other parts of India, some of them, but not all, also found in Ceylon. The Carnatic, the Table-land of Southern India, and Central India, have only three or four species found nowhere else. Bengal has several, not found in the other districts, but all these are common to it and the countries to the eastward. The North-west provinces, and the Punjab, have likewise several forms, not found in other parts of India, but most of these are not peculiar to that region, but extend into the neighbouring Provinces of Asia. The Himalayas have a double Fauna, unknown in the plains: the one is common to these mountains, and to the hilly regions of Assam and Burmah; and the other, in the higher portions of the range, is common to them with Tibet and Northern Asia. Many species of Birds, however, have, hitherto, been found nowhere else

Major Franklin was the first writer who published an Ornithological Fauna of part of India (Proc., Zool. Soc., 1831); and he was very shortly followed by Tickell, in a List of the Birds of Borabhum and Dholbum (Journal, Asiat. Society, 1833), and by Colonel Sykes with his Catalogue of the Birds of the Bombay Deccan (Proc. Zool. Soc., 1832).

Mr. Hodgson, for many years our accomplished Resident at the Court of Nepal, has added very largely to our knowledge of the Birds of the Himalayas, few of which escaped his zealous researches. His most valuable papers

* In the 2nd volume will be given a somewhat more extended view of the geographic distribution of the Birds of India, accompanied with Tables, and this will be paged separately, so as to be bound up with either volume.

have been published in the Journal of the Asiatic Society, Bengal Sporting Magazine, the Calcutta Journal of Natural History, the Madras Journal of Literature and Science, the India Review, and in several home periodicals. They are distinguished by deep research and great acumen, and are very full in details of structure. M'Clelland published an interesting paper on the Birds of Assam, in the Proc. Zool. Society, 1839, from which much information is gained on the habits and geographic distribution of the Birds of that Province. Burgess has given an account of the habits and nidification of many of the Birds of Western India (Proc. Zool. Soc., 1854-55); and Dr. Adams (Proc. Zool. Soc., 1859-60), has published two Lists, one of the Birds of Cashmere, and the other of the N. W. Provinces and Bombay, both containing some most instructive details on the habits of the birds mentioned, and from which I have made many extracts.

Captain, now Lieutenant-Colonel, Tytler has given in the Annals of Nat. History two highly interesting articles on the Faunæ of Barrackpore and Dacca. Kelaart and Layard have written extensively on the Ornithology of Ceylon. Hutton has in various papers given some interesting notes on the habits of several birds and their nidification; and Tickell (Journ. As. Soc., 1848.), and Theobald (J. A. S. 1854), have also contributed to our knowledge of the Ornithology of India. The notes of the Revd. Mr. Phillips on the habits of some of the birds of the N. W. Provinces (P. Z. S. 1857), and Pearson's notes on the Birds of Bengal (J. A. S.), also deserve notice. Numerous other observers have communicated their experiences to Mr. Blyth and myself. In 1839, and subsequent years, I published (Madras Journ. Literature and Science, 1839-44) a Catalogue of the birds of Southern India, with two Supplements,

in which, however, my latest discoveries were not recorded; and I may be excused adding with some pride, that only one species has as yet been added to the Fauna of Southern India, not previously obtained by myself, and that bird a most rare straggler, Lobipes hyperboreas.

Lastly, Mr. Blyth's numerous and valuable papers, already mentioned in the Preface, and his efforts, by intercourse and correspondence, have contributed an *impetus to the study of Natural History*, that has done more to its extension in India, than all the previous publications. His 'Catalogue of Birds in the Museum Asiatic Society, Calcutta,' and Horsfield's 'Catalogue of the Birds of the E. I. C. Museum in London,' have been most valuable aids to me, and are referred to under every species.

Of Illustrated works on Indian Ornithology, the first published was a selection by Mr. Gray from the immense collection of drawings of General Hardwicke. The drawings are very inferior, and were not accompanied by any letter press. Mr. Gould, in 1832, brought out a "Century of Birds from the Himalayan Mountains;" and although the figures are not equal to his subsequent drawings, they are yet very valuable. He is now publishing a magnificent work 'The Birds of Asia,' of which fourteen parts are completed.

Francis Buchanan Hamilton had a large collection of drawings, made by native artists, of the Vertebrated Classes, with voluminous notes. The drawings, as well as the MSS. notes, are deposited in the Library of the Asiatic Society of Calcutta; and copies of some of the drawings appear to have been made use of in Gray and Hardwicke's Illustrations of Indian Zoology. The notes have been, in many instances, quoted by Horsfield in his 'Catalogue of Birds,' from the copy in the Library of the India House. A few coloured drawings, also by

native artists, very much inferior, however, to those of Buchanan Hamilton, were collected by the late Sir A. Burnes, in Sindh, the Punjab, and Afghanistan. These are, also, in the Asiatic Society's Library, and, however inferior as works of art, are valuable, as *showing the distribution of many* birds, and also for the addition of a few new species. In 1844, I published a selection of fifty coloured lithographs, chiefly of unfigured birds of Southern India ("Illustrations of Indian Ornithology"); and the excellence and faithfulness of the drawings (the originals of all of which were painted by natives, and half the number, also, lithographed and coloured at Madras) has been universally allowed. Very many friends who have watched the progress of this work with interest, have expressed their earnest wish that it could have been accompanied by some Illustrative plates similar to those of the book alluded to. To have done this would have added so much to the cost of the work and, delayed its publication, that I was obliged to forego the advantages that might have accrued; but I am in hopes that I may, hereafter, be enabled to publish a Supplementary volume of Illustrations, giving one figure of a bird of each sub-family, and details of the chief genera.

A few details as to the plan I have followed in the following pages are here given.

I have avoided encumbering my work with numerous synonyms; but I have always quoted Blyth's and Horsfield's Catalogues, in both of which the reader will find the synonyms given at length; and I have, invariably cited such names as have been bestowed by Indian Ornithologists. I have also quoted Sykes' Catalogue, and my own, but none of the others, though I have frequently alluded to them in the descriptions. I have also given a reference to the best coloured figure extant; and,

when more than one figure exists, in works devoted to Indian Zoology, I have quoted all. I have also bestowed an English name on all the Birds of India, and I trust that many of these will be found appropriate, as I have, in general, attempted to make them, both popular and scientifically correct. The native names given, though more copious than in any list previously published, are yet very imperfect; and I shall feel greatly obliged to those who may kindly communicate to me additional names in any native language or dialect. I have used the now generally adopted Jonesian orthography for these words; but, for names of places or districts, I have retained the popular mode of spelling.

A List of Authors quoted, and a copious Index will be found at the end of the 2nd volume.

I have commenced with the Raptores, because that is the usual distribution in most English authors, and for no other reason.

THE BIRDS OF INDIA.

ORD. RAPTORES,—BIRDS OF PREY.

Syn. ACCIPITRES, Lin. RAPACES, RAPTATORES of some.

Bill strong, covered at the base with a cere or naked membrane, strongly hooked at the tip, nostrils open; legs strong and muscular; toes four, three in front and one behind, on the same plane, more or less rough beneath, and with strong, generally well-curved, and sharp claws.

The *Rapacious* birds agree with the *Insessores* in having all their toes upon one plane, but differ in their strong bill and strong feet, with curved claws, and from all but the Parrots in the cere at the base of the bill. They agree also with the *Insessores* in having only twelve cervical vertebræ (except among the Vultures) and in not having more than twelve tail feathers, again except some of the Vultures. Their upper mandible is always longer than the lower one, hooked at the tip and pointed, and the edges are frequently furnished with a sharp tooth (sometimes two), and at other times with a blunt festoon or sinuation, well fitted for tearing their tough prey. They have large wings of ten primaries, often very long; the wing coverts are large, and their muscular power great, giving them a powerful flight, capable, in some, of great speed, in others, of long and sustained flight. The tail is often long, almost always broad, of twelve (or rarely fourteen) feathers. The tarsi are generally reticulated, in some furnished with large scales in front; the anterior toes are sometimes connected at the base by membrane, sometimes entirely free, and their upper surface (acropodia) often scaled; many have the tarsi feathered, wholly or partially; the talons are generally sharp, curved, and fitted alike for seizing their prey, and holding it while it is being devoured; in some, however, (the Vultures) they are blunt. In the Osprey, and some Owls, the outer toe is somewhat reversible. Their organs of vision

are large, and their sight very acute. In most the eyes are situated laterally; in the owls alone they are directed forwards. In those that hunt by night a very delicate sense of hearing is added.

They vary greatly in size, most of them being of large or moderate size, some are very large, and others small. They are analogous to the *Feræ* among the Mammalia. Some have a fierce and daring disposition, and great strength, suited equally for rapid pursuit or powerful action, and live chiefly on the flesh of living animals which they catch; others, from their nature, incapable of like exertions or activity, content themselves with such animals as they find dead. The female is in almost all cases the larger bird than the male, and the task of supporting the young (which are born callow and blind) falls chiefly on her. All *Raptores* are, I believe, monogamous, and the pairs live together for their whole lives. They are far from being prolific, few rearing in one brood more than four, many only one and two young ones. They are not very numerous in species. Some of the most typical groups are spread all over the world, but there are many peculiar to warmer regions, where there is a greater abundance of animal life, and especially a great increase in the number of reptiles and insects; and those also that are fitted for devouring carcases, which putrefy so soon in warm climates, are only developed in those countries, and here multiply numerically to a larger extent than any of the others.

The young of *Raptores* do not in general change their nestling plumage till the usual moulting season of the second year. In some, it is said, a partial change of colour takes place in the feathers themselves previous to the first moult.

The skull in *Raptores* is short, broad, and high; the frontal portion flat, convex posteriorly. A longitudinal furrow extends along the whole upper surface of the cranium, and the cranium and face are separated by a sudden contraction. The bony orbits are very complete. The ramus of the lower jaw is formed by an entire bony plate. The number of cervical vertebræ vary from 11 to 14, of dorsal from 7 to 8, sacral 10 to 11, and caudal 7 to 8. The sternum is large, completely ossified—in most

elongated and convex; the manubrial process and the keel well developed. The tongue is of moderate size or small, broad, thick, and slightly divided at the tip. In some of the larger kinds the œsophagus is dilated in the lower parts of the neck, forming the crop. The stomach is more or less simply a membranous cavity, with the muscular coat thin. The intestinal canal is short, rarely more than twice the length of the body. The cœca are small and short, except in the owls, and are said to be deficient in many. The gall bladder is always present. The air receptacles are large in most. The trachea is of uniform thickness, and cylindrical in some; in others it decreases in size downwards, and is somewhat conical.

The *Raptores* are divided by most authors into—1st, *Vulturidæ;* 2nd, *Falconidæ;* and 3rd, *Strigidæ.* Some ornithologists make the genus *Gypogeranus* into a distinct family. The *Polyborinæ* (*Caracaras*, or Hawk Vultures), generally put as a sub-family of the *Falconidæ*, are, I think, entitled to the rank of a distinct family, as well from their structure as their habits.

Gray, in his last list of genera (1855) gives 1st, Fam. *Gypaetidæ;* 2nd, *Vulturidæ;* 3rd, *Falconidæ;* 4th, *Serpentaridæ;* 5th, *Strigidæ;* and Kaup has the same families.

I shall divide the *Raptores* into the following families:—1st, *Vulturidæ* (True Vultures); 2nd, *Polyboridæ* (Hawk Vultures); 3rd, *Serpentaridæ* (Snake Vultures); 4th, *Falconidæ* (Hawks and Eagles); and 5th, *Strigidæ* (Owls). The 2nd and 3rd families are, however, not represented in India.

Fam. VULTURIDÆ, Vultures.

Bill rather long, compressed, straight at the culmen, curved towards the tip, upper mandible never toothed, sometimes sinuate; cere very large, tarsus reticulated with small scales, somewhat short, stout, usually feathered at the knee; sometimes slightly elevated; middle toe long, outer toe joined to the middle one by a membrane, hind toe short, claws rather blunt, strong, not much curved.

The Vultures, so familiar to all residents of tropical regions, are birds of very large size, thick, heavy, and ungraceful form; the

head and part of the neck often bare, or only clad with a few hairs or down. The crop, too, is prominent, and is either naked or covered with woolly hairs. The eye is small, on a level with the head, and not protected by the bony ridge which gives their keen look to the Eagles and Falcons; the wings are very long, and more or less pointed, and the tail short. The sternum has the keel moderate, smaller than in the *Falconidæ*, and is reduced anteriorly. It varies in form in the different sub-families. The furcula is stout and wide, but flat. The cervical vertebræ are more than twelve in number, which is the normal number in all other *Raptores*, and in all the *Insessores*. Their habits, when not satisfying the cravings of their appetite, are sluggish and indolent, their attitude slouching, and they are cowardly and timid, but not shy of man. Their disgusting though useful habits render them an object of loathing, which their general appearance and foul smell are alone sufficient to create. But their great, apparently indispensable, usefulness in tropical countries, should divest them of some of these attributes in the mind of the thinking traveller; and their picturesque aspect when high aloft in the air, wheeling in great circles, and also perched on some magnificent mural precipice, add not a little to the characteristic scenery of tropical countries. As is well known, they devour the carcases of dead animals and other offensive matter, which would otherwise in the hot regions of the world tend to increase the predisposition to disease. They discover their proper food almost entirely by sight, which is indeed most wonderfully keen. I have known a small piece of fresh meat, a fore-quarter of a miserable sheep, exposed in the open, bare plain, where the eye barely discovered a few floating specks in the air high above, and in less than half an hour there would be a number of vultures feeding on it. It is out of the question that smell can have any thing to do with this, and we know from many familiar experiments that vultures will discover and descend on a stuffed carcase of an animal, whilst they will neglect one well hidden, though putrid and offensive. But I do not mean to assert that their sense of sight is illimitable, and in the cases in which I have myself experimented, I do not mean to imply that the very distant birds, that looked like specks,

were those to discover the piece of fresh meat; but ever and anon a bird at a much lower elevation, but still very high above the earth, would sail past, keenly urged by hunger to a closer investigation, and on his espying the morsel, and moving towards it, others at a greater distance, guided by his motions, would descend lower, and on being certified themselves by seeing their neighbours perhaps on the ground near, would drop down in a series of oblique plunges till they reached the ground also. That vultures, however, have also a strong sense of smell is undeniable; many experiments are recorded to show this; and I have myself frequently seen vultures flying closely, and apparently in an excited and unusual manner, over a copse or thicket in which a putrefying carcase was placed; but this is discovered only when the bird happens to pass over the spot at no great height; and I have known concealed carcases escape the ken of the vultures altogether.

Vultures are divided by Gray, in his List of Genera (1855) into the sub-families *Vulturinæ*, *Sarcoramphinæ*, and *Gypohieracinæ*, the *Gypaetinæ* being placed as a distinct family of *Raptores*. Others include the *Lammergeyer* among the vultures, as Gray did in his Illustrated Genera of Birds; and some also place the *Secretary Bird* of Africa as a sub-family of the vultures, which is now generally put into a distinct family. I shall here divide the Indian Vultures into *Vulturinæ*, or True Vultures; *Neophroninæ*, or Scavenger Vultures; and *Gypaetinæ*, or Lammergeyers; leaving the *Sarcoramphinæ*, or American Vultures, and the *Gypohieracinæ*, or Angola Vultures.

Sub-Fam. VULTURINÆ,—True Vultures.

Bill large, thick, strong, higher than broad, hooked only at the tip; cere large, nostrils naked, transverse; head and upper part of neck naked, or covered only with down; wings long, 1st quill short, 3rd and 4th quills sub-equal, 4th longest; tail moderate or rather short, with twelve or fourteen tail feathers; tarsus reticulated, with some large scuta near the claws.

The true vultures are birds of very large size, and are most common in the warm regions of Africa and Asia, some of them extending to the hill regions of temperate Asia and Europe. Their

spread of wing is great, and they soar to vast heights in great circles, often barely moving their wings for minutes together, and then only for one gentle flap. When flying near the ground they flap their wings more frequently, but always alternate this with a sailing motion, with outspread and somewhat upturned wing, the first four or five quills showing distinct, well separated from each other. They breed both on high rocky cliffs, and some few on trees, laying one or two eggs only. When they have young they fill their capacious craws, and carry the contents to the nest, and there disgorge it for them.

The sternum is wide and rounded posteriorly, with two foramina, and they have 15 cervical vertebræ. Blyth divides them into *Vulturinæ* and *Gypinæ*.

Gen. VULTUR, Lin., in part.

Syn. *Ægypius*, Sav.—*Polypteryx*, Hodgs.

Tail with twelve feathers. Bill rather short, strong, deep, curving from the end of cere; nostrils, round or oval; tarsus feathered from more than half of its length; claws strong, rather acute. The neck ruff advances upwards towards the hinder part of the head, and there is a transverse occipital crest of down; otherwise as in the characters of the sub-family.

1. **Vultur monachus**, LIN.

BLYTH, Cat. 131—HORSF., Cat. 1—V. cinereus, GMEL.—V. arrianus, TEM.—Ægypius niger, SAV.—Pl. enl. 425—GOULD, Birds of Europe, pl. 2—GRAY and HARDW., Ill. Ind. Zool. I., pl. 15, f. 2—P. cupido, HODGSON—'Great Black Vulture' of the Himalayas.

GREAT BROWN VULTURE.

Descr.—Of a rich dark chocolate brown color throughout, blacker on the wings, tail, and under parts; the feathers of the nape lengthened, and somewhat lanceolate, forming a dense ruff; lores, cheeks, and throat covered with dark brown hair-like feathers; top of the head covered with soft downy feathers, ending in a sort of occipital ruff of a light brown colour; hind neck below the ears nude. In a younger bird the head is more denuded, and the clothing feathers

of the back are of a loose texture, lengthened and lanceolate; and the feathers are edged and tipped lighter.

Bill with the cere red mixed with ashy, dusky black at the tip; the naked part of neck also ashy red, irides brown, legs dusky yellow.

Length 44 to 48 inches; wing 33; tail 14; bill straight to gape 4; height not quite 2; tarsus 4½; mid toe and claw 5.

This fine Vulture is found, though rarely in the Himalayas, occasionally descending to the plains. I saw it at Saugor in Central India, and also at Mhow. It is found in the lofty hill ranges of Southern Europe and N. Africa.

V. occipitalis, Burchell (*galericulatus*, Tem., Pl. col.13—Rupp. Atl., pl. 22), from Africa, is another species of True Vulture.

Gen. OTOGYPS, Gray.

Head and neck bare, sides of neck with a wattle of skin; bill very thick and strong; crown of the head flat; cranium very large, otherwise as in *Vultur*.

Bonaparte does not separate this sub-genus from the last.

2. **Otogyps calvus,** SCOP.

Vultur, apud SCOPOLI—BLYTH, Cat. 132—HORSF., Cat. 2—Vultur Ponticerianus, DAUD.—TEM., Pl. col. 2—SYKES, Cat. 2—JERDON, Cat. 3—GRAY and HARDW., Ill. Ind. Zool. I., pl. 15, f. 2—*Rang-gidh*, H. also *Mulla gidh* of some—*Bhaonra* H. of Shikarees—*Lal-muta Shakuni*, Beng.—*Raj Sogon*, or *Rajgidh* at Bhagulpore—*Nella borawa*, Tel.—*Rannapanta* of the Yerklees.

BLACK VULTURE.

Descr.—Adult, dark brown black throughout, brownish on the scapulars and some of the secondaries; neck in front with some short brown feathers partially covering the crop, and between this and the dark feathers of the lower parts a zone of white downy feathers, which shows conspicuously; head with a few scattered hair-like feathers about the ears and cheeks.

Cere, naked head, and neck, deep yellowish red, often more or less black spotted; legs dull red. Irides red brown, yellow in

some individuals; length 32 to 36 inches; wing 24; tail 10; bill straight to gape 3; height $1\frac{1}{2}$; tarse 4; mid toe $4\frac{1}{2}$.

The young bird is dull brown throughout.

The Black Vulture is found commonly throughout India, extending into Burmah, but is by no means abundant in individuals. It is usually seen solitary, or in pairs, occasionally four or five together, hunting over some rocky hill. It is dreaded by the other common vultures, *Gyps Indicus* and *G. Bengalensis*, who always give way to one of these black vultures, as recorded by Buchanan, Hamilton, and Blyth, and as I have frequently witnessed; hence its Indian name of King Vulture. It is said usually to breed on inaccessible cliffs, but Lieutenant Burgess found its nest on two or three occasions on trees, with a single white egg.

Vultur imperialis, Temminck, Pl. col. 2, may be intended for the young of this bird, and not for *V. monachus*, as I once imagined. Bonaparte assigns it as the young of *V. nubicus*, which is a synonym of *O. auricularis* (Le Vaill., Ois. d'Afr., pl. 9), a nearly allied species from Africa, but as *V. imperialis* was distinctly said to be Indian, it is most probably the young of our present bird.

Gen. Gyps, Sav.

Tail with twelve or fourteen feathers, bill more lengthened than in *Vultur*, culmen more gradually curving, much rounded and compressed beyond the cere, nostrils oblong, oblique, or transverse; head and neck clothed with soft down; the bottom of the neck with a ruff of lengthened feathers.

3. **Gyps fulvus**, Gmel.

Vultur, apud Gmelin—Gould, Birds of Europe, pl. 1—Blyth, Cat. 133—Horsf., Cat. 4—V. Kolbi, Daud.

Large Tawny Vulture.

Descr.—Light tawny brown above and beneath, lightest on the rump and thigh coverts; greater coverts, scapulars, quills and tail, dark brown; head with some hair-like feathers; neck above with whitish downy feathers, scanty on the lower neck; the crop covered with brown short downy feathers, the ruff of lengthened reddish brown feathers.

Bill greenish horn, dusky at the base; legs dirty yellow. Irid brown; length 4 feet; wing 33 inch; tail 15. Bill straight to gape, $3\frac{1}{4}$; height $1\frac{3}{4}$; tarse $4\frac{1}{2}$; mid toe $5\frac{1}{2}$.

The clothing feathers are more or less lanceolate at all ages; there are fourteen tail feathers; the nostrils are nearly exactly transverse, and narrow; the tarsi are feathered in front for nearly half their length, and there are three or four scuta at the extremity of the outer toe.

This fine Vulture is nearly confined to the Himalayan ranges in India. In Europe it frequents the mountains of the Alps and Pyrenees, extending into Northern Africa and Western Asia. It breeds on rocky cliffs, laying only one egg, which is said to be sometimes white, with a few reddish spots; at other times richly marked with red. Salvin says it is a cleanly, docile, and good-tempered bird.

4. **Gyps Indicus**, Scop.

Vultur, apud Scopoli—Temminck, Pl. col. 26—Sykes, Cat. 1—Blyth, Cat. 134—Horsf., Cat. 6—Jerdon, Cat. and Suppl. Cat. 1—Gray's Ill. Gen. of Birds, pl. 3—V. tenuiceps and V. tenuirostris, Hodgs.—*Ságún*, *Sákún*, *Sogen* and *Changoun*, Beng. —*Maha dho*, Mahr., *Burra gidh* or *Phari gidh*, H.

Long-Billed Brown Vulture.

Descr.—Pale cinereous brown, albescent on the back and rump; the greater coverts and scapulars darker, quills and tail blackish brown; beneath pale tawny, brown on the sides of the breast and flanks; axillaries much lengthened, whity brown; feathers of the ruff whitish, rather short; thighs internally white and downy; head and neck nearly bare; crop covered with short close dark chocolate brown feathers. Bill and cere bluish horny, dusky at the tip; legs and feet dusky cinerous; irides brown.

Length 43 inches; wing, 26 to 29; tail 12; ext. 8 feet; tarsus $4\frac{1}{2}$; mid toe and claw $4\frac{3}{4}$; bill at gape 3; height $1\frac{3}{8}$.

Adams gives it as occasionally 4 feet long, and neatly 9 feet in expanse, and 19lbs. in weight. Surely this must have been an individual of *Gyps fulvus.*

The young bird is paler, both above and below; the head and neck are covered with whitish down, and the feathers of the ruff are longer, lanceolate, and edged with dark brown.

The nostrils are somewhat oblique, oblong; and the bill is much elongated and slender, and the ceral portion especially is long. There are six or seven scales on the outer toe; the hind claw is more curved and larger than in *fulvus;* the tail is of fourteen feathers.

Bonaparte erroneously gives this species as identical with *G. Bengalensis.*

This Vulture is found over all India, more rarely towards the south, and then chiefly near mountains. It is very abundant in Burmah. It does not in general enter towns and villages like the next species. It is not rare on the Neilgherries, and breeds on some of the cliffs on their northern face, also on the cliffs bounding the valley in which are situated the celebrated caves of Ajunta.

5. **Gyps Bengalensis,** GMEL.

Vultur, apud GMELIN—SYKES, Cat. 3—JERDON, Cat. 2—BLYTH, Cat. 135—HORSF., Cat. 7—GRAY and HARDWICK, Ill. Ind. Zool. I., pl. 15, (young)—V. changoun, DAUD—V. leuconotus, GRAY and HARDW., Ill. Ind. Zool. I., pl. 14, (adult)—*Gidh.* H. and Mahr.—*Sagun,* Beng.—*Wallhorya* of the Yerklees—*Guligadu, i. e.,* corpse fellow, Tel.; sometimes also *Matu pudum gudu, i. e.,* cattle-eater, Tel.—*Karru,* Tam.

COMMON BROWN VULTURE OR WHITE-BACKED VULTURE.

Descr.—Adult. Above cinereous black, back and rump white; beneath dark brown, the feathers centred lighter; the short feathers of the crop deep brown; ruff whitish, the feathers short and downy; head and neck nearly bare, with a few scattered hair-like feathers.

The young is lightish brown above, the feathers centred paler; quills, tail, and scapulars blackish brown; beneath light brown, the feathers broadly centred with whitish; feathers of the ruff pale, edged darker, long and lanceolate; head and neck more or less clad with whitish down.

Bill, horny, dusky on cere; legs dusky black; irides red brown.

Length 34 to 36 inches; ext. 7 ft.; wing 23; tail 10; tarsus $3\frac{3}{4}$; mid-toe $4\frac{1}{2}$; bill (gape) $2\frac{1}{2}$; height $1\frac{1}{4}$.

Bill shorter and stouter than in the two last, and nostrils more oblique; outer toe with six large scuta. Tail with only 12 feathers.

This is the most common Vulture of India, and is found in immense numbers all over the country, extending into Assam and Burmah, (and said to be also found in Africa,) congregating whereever any dead animal is exposed. At Calcutta one may frequently be seen seated on the bloated corpse of some Hindoo floating up or down with the tide, its wings spread, to assist in steadying it, and as soon as it has finished its repast, giving place to another. I have seen one washed off in mid-stream, and flap its way to shore. It walks and even runs with facility, though awkwardly. It breeds by preference on rocky cliffs, but also not unfrequently on large trees, laying usually one dirty white egg. Capt. Hutton, J.A.S., VI., gives an interesting account of a young one he reared from the nest.

Other species of *Gyps* are recorded from the south of Europe and Africa, *viz.*, *G. occidentalis* from the Pyrennees, and *G. Rüppellii* from Africa.

Sub-Fam. NEOPHRONINÆ—Scavengers.

Syn. *Sarcoramphinæ* (pars), and *Cathartinæ* (pars), Auct. *Neophrinæ*, Cassin.

Bill lengthened, slender, straight, hooked suddenly at the tip; cere very long, occupying nearly two-thirds of the whole bill; nostrils longitudinal, nearly in the middle of the bill; part of head and the face naked; neck with acuminated feathers; wings ample, pointed, the third quill longest; tail moderate, wedge-shaped; of twelve or fourteen feathers; legs moderate, toes much united at base by membrane.

The genus *Neophron* is usually placed among the *Sarcoramphinæ*, an American group. It differs a good deal, however, in many of its characters from these birds, and Bonaparte, I see, includes it among his *Vulturinæ*, guided no doubt partly by geographical distribution. Its characters and habits are so very distinct, that I have ventured to form it into a distinct sub-family.*

* Since writing the above, I see this has been already done by Cassin.

The sternum has the two foramina open posteriorly, and there are 14 cervical vertebræ.

Gen. NEOPHRON, Sav.

Syn. *Percnopterus*, Cuv.

Char.—Same as those of the sub-family.

6. Neophron percnopterus, LIN.

Vultur, apud LINNÆUS—SYKES, Cat. 4—JERDON, Cat. 4—BLYTH, Cat. 137—HORSF., Cat. 8—V. Ginginianus, DAUD.—V. stercorarius, LAPEYROUSE—Percn. Ægyptiacus, STEPH.—Pl. enl. 427, 429—GOULD, Birds of Europe, pl. 3—*Kal murgh*, H. of Meer Shikarees—*Tella borawa*, Tel.—*Manju-Tiridi*, Tam., *i. e.*, Turmeric-stealer, vulgo *Pittri gedda*, Tam., *i. e.*, Dung Kite—*Sindho* of Wagrees—*Soongra* or *Soonda* in Sindh—Pharoah's Chicken in Egypt.

WHITE SCAVENGER VULTURE.

Descr.—Adult, of a yellowish or creamy white, quills black, feathers of the neck long and lanceolate, cere and face deep turmeric yellow, tip of bill horny yellow; irides dark brown; legs dirty yellow.

Length—26 to 29 inches; wing 19; tail 9 to 10, of fourteen feathers; tarsus 3; mid toe 3; bill at gape $2\frac{1}{2}$.

The young has the plumage dirty brown, with the quills blackish brown, the back and rump albescent or tawny, the outer edge of the secondaries and of some of the primaries cinereous, the nude parts of the head and the cere greyish; feet cinereous. In a further stage the birds are mottled brown and white.

This well-known bird is abundant throughout the greater part of India, being more rare in Central and Northern India and unknown in Lower Bengal. As is well known in India, its chief food is human ordure, and some of its popular names signify this. It also partakes of carrion, but its feeble bill is less qualified for this kind of food. It walks with ease, stalking about with a peculiar gait, lifting its legs very high; and it also runs with facility. It breeds on rocky cliffs, also on large buildings, pagodas, mosques, tombs, &c., and occasionally on trees. It forms a large

nest of sticks and rubbish, often lined with old rags, and lays generally two eggs, sometimes white, with a few rusty brown spots, at other times so richly covered with them as to appear quite red, with a few liver-brown blotches.

This Vulture is preserved in Egypt, where it goes by the name of Pharoah's Chicken. It is common throughout the North of Africa, Western Asia, and even the South of Europe, a straggler finding its way to England now and then.

A second species of *Neophron* exists in the *Cathartes monachus*, Tem., Pl. col. 222 (the *Vultur pileatus* of Burchell and *N. Caruneulatus* of A. Smith, from Africa).

Sub-fam. GYPAETINÆ, Bon. and Gray.

Bill strong, lengthened, compressed, straight; upper mandible ascending in front of the cere, then curved, with the tip much hooked; nostrils oval, vertical, covered with dense rigid recumbent bristles; lower mandible with a beard, or tuft of rigid setaceous bristles directed forwards; head closely feathered; wings very long, the first quill rather shorter than second, the third longest; feet short, stout; the tarsus hirsute to the toes; the thigh coverts lengthened, the three front toes slightly united by membrane, middle toe very long, hind toe short, claws strong, moderately curved; tail cuneate, long.

The Bearded Vulture forms a natural link between the *Vultures* and the *Eagles* both in its structure and habits, but is apparently more vulturine in its structure. The eye is on a level with the head, the craw projects when full, and it has 13 cervical vertebræ. The sternum is short and very broad.

Gen. GYPAETUS (Storr).

Syn. *Phene*, Sav.

Char.—Same as those of the sub-family.

7. **Gypaetus barbatus**, LIN.

Vultur, apud LINNÆUS—BLYTH, Cat. 138—HORSF., Cat. 10—G. Grandis, STORR—G. hemachalanus, HUTTON, J. A. S. III, 523; IV. 455; VII. 20—Phene ossifraga, SAV.—GRAY, Gen. of Birds,

pl. I.—GOULD's Birds of Europe, pl. 4.—*Argul* H. at Mussooree. 'Golden Eagle' of residents at Simla.

THE BEARDED VULTURE.

Descr.—Head whitish, with dark streaks, and a black cheek stripe, and black supercilium; nape and neck above creamy white; lower back of neck, back, rump, and lesser wing, black; the back and rump paler, with white shafts, and the coverts with white streaks, ferruginous in the young; greater coverts, wings, and tail, ashy black, with darker edges, and white shafts to the feathers; beneath dull orange, or ferruginous, with a more or less marked black gorget or pectoral collar, which, however, is not always present; the ferruginous hue paling posteriorly below the breast, and becoming albescent on the lower belly and under tail coverts.

The immature bird has the head, neck, and plumage generally dark brown, varied with buff.

Bill horny, irides white, with the sclerotic membrane red, eyelids livid blue, toes bluish plumbeous, claws black.

Length of a male 46 inches, ext. 9 feet. 12 ℔s. in weight (Adams). Pallas says up to 20℔s. A female measures above 4 feet sometimes, and the expanse of wing 9½ feet. Of one 4 feet long, the wing is 34 inches. Tail 19; bill 3½; tarsus 4½; mid toe 4.

This fine bird is found in the Himalayas from Nepal to Cashmere, and also on the Salt and Suliman ranges of the Punjab. I did not observe it at Darjeeling. It extends from the skirts of the hills to the Snowy Range, and is not uncommon at Simla, Mussooree, and other stations in the N. W. Himalayas. Hutton asserts that it usually feeds on carrion, and rarely carries off any thing larger than a fowl, which it devours as it flies. Hodgson asserts the same, and says that it is fearless of man when bent on securing some offal or flesh. Other observers state that it is wary. Dr. Adams states that it preys much on marmots. A bird of this species is noticed by Bishop Heber, who says (on hearsay, however, I believe), that it was thirteen feet in expanse of wings, and was said to have carried children off from the streets of Almora. In

Europe it is said to carry off lambs (hence the German Swiss name of *Lammergeyer*), kids, young chamois, and even children. It is also said to hurl chamois, and even on the Himalayas *Ovis*, *Ammon* off precipitous cliffs by a sudden swoop, to feed on the mangled carcases.

In Africa, it is said to feed on reptiles, tortoises, which it drops on the rocks, &c. It is said to be a stupid, unsociable bird when captured. Its flight, however, is described as being most majestic, strong, swift, and easy, resembling that of the Albatross, and skimming for miles without any perceptible motion of his wings. On the ground its gait is awkward, the head and neck held erect, and the feet lifted off the ground, like those of Neophron. It has a hoarse croak when angry. It breeds on some inaccessible cliff, forming a huge nest, and laying one or two white eggs (April and May). It is said by some to differ from the European bird in the dark gorget, more tawny hue, of the lower surface, and in the 1st quill being 3½ inches shorter than the 3rd, whilst in the European bird it is said only to be a very little shorter.

The rusty colour of the lower parts is perhaps partly due to a rust-coloured powder, secreted, according to Adams, in quantities among the feathers of the neck and lower parts.

I extract the following interesting account of the habits of this fine bird from the notes of a late observer, Dr. Adams, P. Z. S. 1858, p. 467:—

"The Bearded Vulture does not strictly confine itself to live animals; for on the hill stations at daybreak, among the first camp-scavengers, it is seen sailing leisurely along the mountain-sides in search of offal and refuse. Yet, with all, the Lämmergeier is a noble-looking bird, either when feeding in camp, or hunting for prey on the more distant mountains. When thus employed, he flies low, keeping within a few yards of the ground, and describes circles on the mountain-side until he has beaten it from top to bottom. The Bearded Vulture is easily distinguished on wing from any other species by the long sharp-pointed wings and tail. There are few rapacious birds possessing greater powers of flight, although generally to be seen sailing quietly and slowly along the mountain-sides, flapping now and then his long wings

when he wishes to mount higher. If suddenly frightened, or bullied by his common tormentors, Govind Kites (*Milvus govinda*), or Indian Jackdaws (*Corvus splendens*), he will shoot like an arrow down the ravine, then rise up with an easy but very rapid flight. It is by no means a shy bird, and will often pass within a few yards of one when searching for food. The nest is always built among rocks and inaccessible places. On one of the lesser ranges near Simla, I found its nest and two young on a cliff overhanging a steep ravine; a vast collection of bones of sheep and cattle was strewed around—the refuse of one of the European stations not many miles distant. In the stomach of one killed by me on the Mountains of Cashmere, I found several large bones, together with a hoof of an Ibex. Many tales are told by the natives of the Himalayas of the boldness and strength of this species, that the ibex, young bears, sheep, and goats are often carried away."

Bonaparte makes three species, but keeps the Indian one under *G. barbatus*. Of the other two, *G. occidentalis*, from the Pyrennees, Sardinia, Arabia, and Abyssinia, is smaller and brighter colored; and the other species, *G. nudipes*, from Africa, has the lower part of the tarsus quite nude.

The sub-family GYPOHIERACINÆ, Gray and Bonaparte, is founded on the *Angola Vulture*, *Gypohierax Angolensis*, figured in Gray's Gen. of Birds, pl. 4. But little is known of its habits. It appears to be a link joining the true *Vultures* to the *Neophron*, or perhaps uniting the *Vultures* to the *Polyboridæ*, and was figured by Jardine as the *Polyborus hypoleucus*. The bill is lengthened, but strong and compressed; it has the colours of *Neophron*, and the head and neck are more clothed with feathers, even in the adult, than in *Neophron* and *Sarcoramphus*.

The sub-family, SARCORAMPHINÆ, or CATHARTINÆ (Bonaparte) are strictly American. They include two groups; 1st, the *King Vulture* (*Sarcoramphus Gryphus*) and the celebrated *Condor* (*Sarcoramphus papa*), the male of which has a fleshy caruncle over the nostrils; and 2nd, the *Turkey Buzzards*, so called. The former are birds of large size, distinguished by the total want of tracheal muscles. Like the

true *Vultures*, they have fifteen cervical vertebræ. The *King Vulture* is perhaps the handsomest bird of his family, and well deserves the name; whilst the *Condor* is the giant of all, but said not to be so wide across the wings as the *Bearded Vulture:* it lives on the higher regions of the Andes.

The Turkey Buzzards, or Turkey Vultures, form the genus *Cathartes*, and grade from the last by means of the Californian Vulture. Two species are known from North America, and two from South America. They are blackish birds, with naked heads, the bill rather slender and lengthened, but wider than that of *Neophron*, and the apical portion strong and arched. The toes are scutellated above, and the hind toe very short. The sternum has a foramen, open in some, closed in others, and a notch as well, nearer the keel; and they have fourteen cervical vertebræ. In their habits they are quite familiar, and live chiefly on carrion and garbage, but are said also to eat reptiles and eggs.

The family POLYBORIDÆ, or Kite Vultures, are peculiar to America, and chiefly to South America. Bonaparte, however, includes among them a Madagascar bird, *Polyborides radiatus*, *Vultur* apud Scopoli, (*F. Gymnogenys*, Temminck, Pl. col. 307,) Smith, S. Afr. Zool., t. 81 and 82. They have the bill rather elongated, the basal portion straight, the tip very slightly hooked, and the margin barely festooned. The wings are long, 3rd, 4th, and 5th quills longest; the tarsi are long, slender, and covered with large scales in front. The surface of the crop (and sometimes part of the head and throat) are naked, or clad only with down, giving the bird a very vulturine character; and after feeding, the crop protrudes like that of a vulture. They possess the carrion-feeding habits of the vultures, frequenting the neighbourhood of slaughter-houses, and feeding not only on dead bodies, but also on worms, insects, frogs, &c.; and some of them are said at times to feed on berries and insects. They are inactive in their habits, with slow heavy flight, but they run well on the ground. They are said to show affinities to the *Gallinaceæ* in their voice, their disposition to rub themselves in sand, and in their eagerness for fighting; and their slightly-hooked bill, the structure of the tarsi, and their general

appearance, certainly give them a peculiar aspect; and taking into consideration their whole structure and habits, they appear to me to be well worthy of separation as a distinct family in this order, and certainly more allied to the *Vultures* than to the *Falconidæ*. The *Polybori*, too, it may be mentioned, only lay two eggs.

The best known species are *Polyborus brasiliensis*, the *Carrancha;* the *Chimango*, *Milvago Chimango;* and *M. australis* from the Falkland Isles, the tamest and boldest of all. Other genera are *Ibycter* and *Daptrius*. One species of *Ibycter* is said, like *Neophron*, to feed on excrement as well as on carrion.

The family SERPENTARIDÆ, Gray, (*Gypogeranidæ*, Bonaparte) was formed for the reception of the well-known Secretary Bird, or Serpent-eater of Africa (*Serpentarius reptilivorus*, Levaill., Ois. d'Afr., pl. 25). It is distinguished from all other birds of prey by its long tarsi, which has led to its being formerly classed with Waders or Gallinæ. It is a very large bird, with handsome crest, and elongated tail, of very easily domesticated habits, so that it is often kept in poultry-yards to destroy snakes, lizards, and other vermin. The bill is rather short and well curved, the wings are long, the shoulders armed with a blunt spine, the tarsi long, and toes very short, with the front ones much united by membrane, and the hallux very short, and articulated above the plane of the others. The lower part of the tarsus and acropodia are scutellated; the claws are blunt, and little curved. The sternum is entire, much narrowed posteriorly. I have given it distinct family rank, in accordance with Gray and Bonaparte. It certainly bears some resemblance to *Circaetus* and *Spilornis*, next which Swainson classes it in his Synopsis of Genera, but I cannot see any affinity to the *Harriers*, with which Gray formerly classed it.

Fam. FALCONIDÆ.

Bill usually short and compressed; tip elongated, curved, and sharp; margin of upper mandible toothed or festooned; wings more or less pointed; tail various, generally rather long; legs and feet strong; tarsus bare, or feathered; toes generally unequal,

with the claws long, sharp, and well-curved; head and neck are always feathered; eyes sunk, shaded above by a bony projection or brow.

This family comprises all the diurnal birds of prey not previously mentioned, *viz.*, the Hawks, Eagles, and Kites. They fly well, and take their prey on the wing, feeding on small mammals, birds, reptiles, fishes, and insects, a few of the larger kinds not disdaining carrion or garbage. They generally remove part of the hair or feathers before eating their prey, but any indigestible portions remaining are vomited up in the form of round pellets. They perch with the body pretty erect, and with the head and neck thrown back, but their curved claws prevent them from resting well on the ground, and they move badly on it. Almost all are solitary and monogamous. Their cry is shrill, or plaintive and wild. They breed either in trees, or on rocks and buildings, laying two to five eggs, white, more or less spotted and blotched with reddish brown. They undergo great changes of plumage at different periods of their life, which render their determination somewhat difficult, and has led to a considerable multiplication of names. As a family they present great differences of size, structure, aspect, and habits, which will be better pointed out under the head of each sub-family, than as a whole.

Gray divides them into *Circinæ*, *Accipitrinæ*, *Milvinæ*, *Falconninæ*, *Aquilinæ*, *Buteoninæ*, and *Polyborinæ*. Blyth sub-divides them still further into *Falconinæ*, *Perninæ*, *Elaninæ*, *Circætinæ*, *Circinæ*, *Accipitrinæ*, *Thrasactinæ*, *Aquilinæ*, *Buteoninæ*, *Haliætinæ*, and *Polyborinæ*. Of these sub-families the *Perninæ* and *Elaninæ* form part of the *Milvinæ*, of Gray, *and* the *Circaetinæ*, *Thrasaetinæ*, and *Haliætinæ* part of the *Aquilinæ*. Vigors, Swainson, Kaup, and Horsfield divide the *Falconidæ* into *Falconinæ* or *Falcons*, *Accipitrinæ* or *Hawks*, *Milvinæ*, or *Kites*, *Bateoninæ* or *Buzzards*, and *Aquilinæ* or *Eagles*, which divisions I have adopted in the present work, the *Harriers* being the only other group I would feel inclined to separate, and these are, I conceive, very closely related to the Buzzards by a species mentioned hereafter. I have, however, made some alterations in the allocation of various genera.

Sub-Fam. FALCONINÆ.—True Falcons.

Bill short, strongly curved and hooked, the upper mandible with a sharp tooth (or sometimes two) overlapping the lower one, which is short, truncated, and slightly notched to receive the tooth of the upper maudible. The wings are long, with the second quill usually longest, sometimes the third nearly equal to it, and one or two of the first quills are usually notched on their inner webs. The tail is moderately long, even, or very slightly rounded, and broad; the legs are short, muscular, and reticulated; the toes lengthened, with the outer and inner one generally very unequal in length; the claws sharp, well curved, and somewhat retractile.

The true or noble Falcons, the type of the order, are the *Siah Chasm*, *i. e.*, black-eyed, of Indian Falconers, all the species having dark irides, as opposed to the *Goolab Chasm*, or light-eyed Hawks. They are usually powerful and muscular birds, capable of both rapid and protracted flight. The head is large, the skull strongly vaulted, and the eye-socket nearly closed; the brain is large, and the eyes expressive. The sternum is large, wide, with only two small foramina, and has a large and deep keel for the insertion of the pectoral muscles, which are very powerful. The webs of their quill feathers are strong and unyielding, and they beat the air strongly and rapidly with their wings. When high up, and hunting for game, they soar in circles like other birds of prey, and descend rapidly with closed wing when the quarry is raised, which they usually strike in the air. From time immemorial they have been trained by man to hunt, and in this state their courage and daring are much increased, so that they will attack much larger birds than in their wild state. They are usually of moderate size, and are not numerous in individuals. They are found in every part of the world, and have of late been divided into several genera. The most typical of them breed on rocks, the others on trees.

Gen. FALCO, Lin., (in part).

Char.—Bill with the upper mandible furnished with one strong tooth, nostrils round, with a central tubercle; wings long and pointed,

reaching nearly to the end of the tail, the first one or two quills notched internally, the 2nd quill longest; the tail rather short; tarsus short, strong, reticulated, feathered at the knee; toes long, scutellated, the middle toe very long, outer toe longer than the inner; claws long and sharp, inner fore and hind claw very large.

This genus comprises the most typical Falcons, and are found all over the world. They are birds of large size mostly, and the changes of plumage they undergo are greater than in most others of the family. They have a dark cheek stripe more or less conspicuous. Of late they have been sub-divided into three lesser groups, which I shall merely indicate here. The first group comprises the *Peregrines*, the second, the *Lanners*; and the third, the *Jerfalcons*.

Peregrines—FALCO, as restricted.

These are distinguished from the other two groups by their longer wings, shorter tail, longer toes, a more marked cheek stripe, and darker plumage.

8. **Falco peregrinus,** GMEL.

F. Communis, BRISS—F. Calidus, LATH., (the Indian variety)—F. Micrurus, HODGS.—JERD., Cat. 27.—BLYTH, Cat. 33—HORSF., Cat. 18—GOULD, Birds of Europe, pl. 21—Pl. enl. 430, 421—*Bhyri*, H. (the female); *Bhyri bacha* (the male)—*Bhyri Dega*, Tel.—*Dega*, *i. e.*, 'the Hawk' par excellence of the Yerklees.*

THE PEREGRINE FALCON.

Descr.—Young bird above dark brown, most of the feathers edged with paler and somewhat rufous brown; head more edged with whitish, especially the hind head; cheek stripe brown; wings darker brown than the back, with pale rufous spots or bars on the inner webs; the tail dusky cinereous, with numerous interrupted pale rufous, or rufous white bars; beneath white or creamy, with brown oval spots, longitudinal and narrow on the throat and breast, wider and ovate on the abdomen.

* It is the *Bas* of the Bucharians and *Basi* of the Persians according to Pallas.

Adult.—Above deep bluish grey, most of the feathers with some dark markings; head, nape, and moustache darker, rump and upper tail coverts much lighter; wings blackish brown, more or less spotted or barred with white on the inner web; tail grey, with some dark bands, and a pale tip. Beneath chin and throat pure white; breast white, with a few narrow longitudinal streaks, almost disappearing in old individuals; abdomen with some small heart-shaped spots; flanks and thigh coverts with dark, transverse bars. Inner wing coverts white, with numerous well-marked dark cross bars.

Bill bluish, black at tip, cere yellow; legs and feet yellow.

Length of a female about 19 inches; wing $14\frac{1}{2}$, reaching nearly to the end of tail, which is $6\frac{3}{4}$; tarsus $2\frac{1}{8}$; mid toe and claw nearly 3.

Length of a male about $15\frac{1}{2}$ to 16; wing $12\frac{1}{4}$; tail $5\frac{3}{4}$.

At each successive moult from the plumage of the young bird the feathers of the upper parts become more grey (losing their light edges at the first moult), gradually increase in depth of colour and get dark markings; whilst in those of the under-parts, the dark oval spots gradually disappear on the throat and breast, or merely remain as narrow lines, whilst on the abdomen and flanks they are changed into small oval spots and narrow cross bars.

It is still undecided whether to look on the *Bhyri* as a distinct species from the European Peregrine, or to class it as a slight climatal variety. Blyth, Gray and Horsfield, in their respective Catalogues, considered them the same. Of late it appears that Mr. Gould considers them now as specifically distinct, retaining Latham's name, *Calidus*, for the Indian Bird; and in this he is followed by other ornithologists. Mr. Blyth, on comparing specimens of both countries, says that the European Peregrine has always more rufous color on the lower parts than the *Bhyri*, and that the cross bars are much larger and stronger. Mr. Blyth further says that the breast of the European hawk is more conspicuously spotted (but this may disappear with age); and that the *Bhyri* has much more and brighter yellow upon the cere and base of bill. "The difference," says that gentleman, "altogether amounts to this, that adults at least may readily be distinguished at the first glance." Very closely

allied species from New Holland and North America have already been separated from the European bird, but their distinctive marks appear to be stronger than in the races of Europe and India. Moreover, our Indian bird is only a winter visitant here, and is spread over the greater part of Northern Asia; and specimens from thence, which must exist in some of our Museums, do not appear to have been distinguished from the European bird.

If we except Latham's description of *F. Calidus*, taken from an Indian drawing, there was no record of the existence of the Peregrine Falcon in India before my Catalogue of Birds was published in 1839. Franklin's and Sykes' Catalogues do not contain it. Hodgson, in 1844, gave it as found in Nepal. It is found throughout the whole continent of India, from the Himalayas to Cape Comorin, during the cold weather only. I have found it near Trichinopoly, and at Calicut, on the West Coast, and I know that many used to be captured at Ramnad still further South. It is abundant all along the East Coast, less so perhaps on the West Coast; and inland, is found in suitable localities, especially where there are lakes and large rivers, or where hilly tracts occur, up to the Himalayan range. It prefers here (as elsewhere, I believe,) the sea coast, perhaps by reason of the greater abundance of food, as the water birds are much preyed on by this Falcon.

I have seen the *Bhyri* strike down various water birds, teal, duck, &c.; and on one occasion I saw a pair pursue and kill a snipe. Often a large flock of duck has been forced to come within reach of my gun at some small tank by the downward swoop of a *Bhyri*, which the hapless fowl dread more than man even, and I have often had wounded teal, snipe, and other birds carried off by them.

The *Bhyri* has particular haunts that it frequents for days or weeks together, and near some of their feeding grounds there is often a particular tree to which they invariably resort to eat the birds they have caught. In their untrained state they seldom fly at larger birds than duck, to which however they are very partial, so that their representative in America, *F. Anatum*, is there popularly called the duck hawk.

The *Bhyri* does not breed in this country, nor even, I believe, in the Himalayas, but migrates to the north in April, and returns about the first week of October. Mr. Layard mentions the Peregrine as breeding in Ceylon in January, and Dr. Adams says that he found the nest on a tree on the banks of the Indus below Ferozepore; but I imagine in both cases an old *Laggar* has been mistaken for the *Bhyri*. The Peregrine breeds in Europe and Northern Asia, on high cliffs, often on the sea coast, or overhanging a river or lake. The eggs, three or four in number, are reddish colored with brown spots.

The *Bhyri* is still trained in some parts of the country for the purposes of falconry, and used to be so much more extensively than now. The birds were mostly captured on the coast, and sold for a few Rupees, from two or three to ten, to the falconers who came to purchase them. It is trained to strike egrets, herons, storks, cranes, the *Anastomus*, *Ibis papillosa*, *Tantalus leucocephalus*, &c. It has been known though very rarely to strike the Bustard. Native falconers do not train it to hunt in couples, as is done in Europe sometimes. I may here mention that the idea of the Heron ever transfixing the hawk with its bill is scouted by all native falconers, many of whom have had much greater experience than any Europeans. After her prey is brought to the ground indeed, the Falcon is sometimes in danger of a blow from the powerful bill of the heron, unless she lays hold of the Heron's neck with one foot, which an old bird always does. Whilst on this subject, I may state that our best artists, Landseer included, represent the Falcon when stopping on her quarry as striking with her beak, whereas, as is well known, she strikes only with her talons, and chiefly with the powerful hind claw, backed by the impetus of her stoop, when she contracts the foot, and thus clutches her prey. When the *Kulung*, (*Grus virgo*) is the quarry, the *Bhyri* keeps well on its back to avoid a blow from the sharp, curved, inner claw of the crane, which can, and sometimes does, inflict a severe wound.

I see that a Falcon called *El Bhari* is known in North Africa. It is said to be something like *Falco Barbarus*, but larger. This may very probably be the Peregrine, or some

one of its nearly allied races, and hence perhaps the origin of the Indian name.

9. **Falco peregrinator**, SUNDEVALL.

BLYTH, Cat. No. 65—HORSF., Cat. 20—GOULD, Birds of Asia, pl. 36—F. Shaheen, JERD., Cat. 29, and JERD., Ill. Ind. Orn., pl. 12 and 28—F. Sultaneus, HODGSON—*Shahin, i. e.* the Royal bird (the female), *Kohi* or *Koela* (the male) Hind.—*Jawolum*, Tel.—*Wallur*, Tam.

The SHAHIN FALCON.

Descr.—Young bird with the upper parts and cheek stripe very dark cinereous, or dusky blackish. darkest on the head, hind neck and cheek stripe, most of the feathers narrowly edged with rufous, those of the back and rump more broadly so; occasionally the forehead is somewhat rufous, and there is always a patch on the nape, where it forms a sort of crucial mark; tail paler than the rest of the body, faintly barred with rufous, and tipped with the same; chin and throat pale rufous yellow, almost white in some birds, and unspotted; cheeks the same, with narrow dark stripes; the rest of the body beneath bright rufous or chestnut, with longitudinal dark brown stripes on the lower breast and the middle of the abdomen, oblong spots on the sides, and arrow-shaped markings on the lower abdomen, vent, and under-tail coverts: under-wing coverts rufous with dark brown bars; the quills barred with rufous on their inner webs.

The old bird has the head, nape, and cheek stripe almost black, back and upper parts slaty, light on the rump, and almost without any markings; chin, throat, and upper breast white; the rest of the plumage beneath rufous or chestnut, almost unspotted.

The changes of plumage from the young bird consist in the head gradually becoming darker, the back (and the rump more especially) becoming lighter, and more slaty blue, and in the markings of the lower surface gradually disappearing from the crop downwards, with each successive moult. Individuals vary a good deal in the amount of white on the chin and throat, and in its intensity; in some it is well marked, in others always a creamy or rufous white.

Bill slaty blue, dark at the tip; cere, orbits, and legs yellow; irides intense brown.

Length of a female $17\frac{1}{2}$ to $18\frac{1}{2}$ inches, wing $13\frac{1}{2}$, tail $6\frac{1}{4}$. Length of a male 15, wing $10\frac{3}{4}$, tail $5\frac{1}{4}$. A female weighed 1lb. 10oz.

An individual female *Shahin* in the Museum of the Asiatic Society has the lower plumage, and especially the thigh coverts and under-wing coverts, so much mixed with whitish, and the bars so numerous and close, that I strongly suspect it to be a hybrid between the *Shahin* and the *Peregrine*. It was sent from the N. W. Himalayas.

Sundevall first described this Falcon in his paper on the Birds of Calcutta, published at Lund in Sweden, 1838, which, however, was not known in England till Strickland had it translated in 1846. I was the first English writer who noticed it. This was in 1839. Sundevall obtained his specimen on boardship in N. L. 6° between Ceylon and Sumatra, about 70 miles from the Nicobar Islands.

The *Shahin* Falcon is found throughout the whole of India from the Himalayas to the extreme South, extending into Affghanistan and Western Asia. It is, however, far from being a common bird. Its habitual resorts are high rocky hills, in the neighbourhood of jungle and forest land, whether in a low or mountainous country, though the latter is always preferred. In the Carnatic, which is nearly devoid of forest, the *Shahin* is but seldom met with, yet there are certain spots even there, where individuals of the species resort to after the breeding season, being chiefly young birds, and they are known to breed in various parts of the range of Eastern Ghauts. Its habits in a wild state vary somewhat according to the kind of country frequented. If a denizen of a forest, it watches on some lofty tree at the skirts of a glade, or hovers over it, ready to pounce on any unlucky bird that ventures to cross. In more open country it is necessitated to take a wider circuit in search of its prey, and is of course much more on the wing. Such birds are more highly prized for training than forest-bred birds, which are therefore seldom sought for. This Falcon destroys large quantities of game, partridges, quails, &c., and it is said to be very partial to parroquets. This assertion is corroborated by the fact of my having

first obtained a specimen of the Alexandrine parroquet by the agency of a *Shahin*, which pounced on a flock crossing a glade of a forest in Malabar, and carried one off, but dropped it on my firing at it. Very lately, too, one belonging to me having lost a partridge at which it was flown, took a long, though unsuccessful flight after some parroquets it spied high up in the air. One I shot in Travancore just after sunset, was busily devouring a goat-sucker it had captured.

The *Shahin* breeds on steep and inaccessible cliffs. I have seen three eyries, one on the Neilgherries, another at Untoor, and a third at the large water-fall at Mhow. It lays its eggs in March and April, and the young fly in May and June, when they are caught by the Falconers.

The Royal Falcon of the East (as its Indian name implies) is very highly prized by the natives for hawking, and it is esteemed the first of all the Falcons, or black-eyed birds of prey (as they are called in native works on Falconry), the large and powerful *Bhyri* (the Peregrine) even being considered only second to it. Although hawking is now comparatively at a low ebb in India, yet many individuals of this species are annually captured in various parts of the Peninsula, and taken for sale to Hydrabad, and other places where the noble sport of Falconry is yet carried on, and they sell for a considerable price. The *Shahin* and other Falcons are usually caught by what is called the Eerwan. This is a thin strip of cane of a length about equal to the expanse of wings of the bird sought for. The ends of the stick are smeared with bird-lime for several inches, and a living bird is tied to the centre of it. On observing the hawk, the bird, which has its eyes sewn up to make it soar, is let loose, and the Falcon pounces on it, and attempts to carry it off, when the ends of its wings strike the limed twig, and it falls to the ground. The birds usually selected for this purpose are doves, either *Turtur risorius* or *T. humilis.*

The *Shahin* is always trained for what, in the language of Falconry, is called a standing gait, that is, is not slipped from the hand at the quarry, but made to hover and circle high in the air over the Falconer and party, and when the game is started, it then

makes its swoop, which it does with amazing speed. It is indeed a beautiful sight to see this fine bird stoop on a partridge or florikin, which has been flushed at some considerable distance from it, as it often makes a wide circuit round the party. As soon as the Falcon observes the game which has been flushed, it makes two or three onward plunges in its direction, and then darts down obliquely with half-closed wings on the devoted quarry, with more than the velocity of an arrow. This is of course a very sure and deadly way of hunting, but though infinitely more exciting than the flight of short-winged hawks, is certainly not to be compared in interest to the flight of a *Bhyri* from the hand after the heron, or the Douk (*Tantalus leucocephalus*). The *Shahin* is usually trained to stoop at partridges and florikin (*Otis aurita*), also occasionally at the stone plover (*Œdicnemus crepitans*) and the jungle fowl. It will not hover in the air so long as the Laggar, which being of a more patient and docile disposition, will stay up above an hour.

Of its range out of India we have at present no correct information; but in several works on Falconry, which I have seen in this country, Persian, Toorkish, and Arabic names are assigned it, so that it may occur in other parts of Asia. In these works the name *Shahin* is said to be that by which it is known in Persia, as well as among the Mussulmans of India, *Kohi* being the name given to it by the Hindoos of the north of India, whence, in all probability, comes the name of the male bird in general use, viz., *Koela*, or *Kohela*, though it is said to be called *Shahin bacha* in Persia. It is said to bear the name of *Lahin* in Toorkistan, and *Kabarsh* in Arabic. Among the localities for it given in the native works of Falconry, are Koordistan, Khorasan, Moultan, and Cabool. Several varieties are enumerated, viz., the red, the white, the blue, and the black, but these are merely shades of difference in the colors, and in the more or less distinctness of the markings. These variations however, I may remark, are very considerable in this Falcon, as well as in the Peregrines found in India, and are probably in some measure owing to the long domestication, if I may so speak, of these birds, which are always liberated by the natives when no longer required, as it is well known that birds moulting in con-

finement vary somewhat in the shades of their plumage from those subject to the more vigorous actions of a wild state of life.

2nd. (*Lanners—Gennaia*, Kaup.)

They differ from the last by their somewhat lengthened tail, shorter toes, and narrower cheek stripe. The two first quills are emarginated. They are of large size, and some of them at all events breed on trees.

10. **Falco Sacer**, Schlegel.

F. lanarius, Gray, Cat. B. M.—Horsf., Cat. 22—Pallas Z. R. A.—F. Cherrug, Gray, Hardw., Ill. Ind. Zool. pl. 25—Gould, Birds of Europe, pl. 20—F. milvipes, Hodgs.—Gray's Zool. Misc.—*Chargh.* H. (female); *Charghela* (the male)—*Saker* or *El Sakkr* (in N. Africa).

The Saker or Cherrug Falcon.

Descr.—Young bird with the top of the head yellowish white, brown streaked; upper parts brown, with slight pale edging to some of the feathers. Beneath white, with large oval brown spots; legs and feet pale bluish; bill and cere bluish blackish at tip. The adult has the upper parts rather pale slaty brown, almost slaty in old birds; cheek stripe indistinct; top of the head reddish ash color with fine black streaks; chin white; breast and lower parts white, with oblong, slaty spots; cere greenish white; feet lemon yellow.

Length of a male 18 inch; wing 12½; tail 7½. Of a female 20 to 21; wing 14; tail 8.

The researches of naturalists of late have made known that the *Saker* and *Lanner* of the old writers on Falconry are in reality two distinct species, found in the East and South of Europe, Asia, and Northern Africa. I have followed Bonaparte in assigning *F. Sacer* to the Falcon found, though rarely, in the Himalayan range. Hodgson sent it from Nepal, and according to the testimony of native Falconers, it used to be brought for sale frequently in the good old times, and was used for striking antelopes, hares, &c. It is stated that the Lanner is now used in North Africa

to strike gazelle and the *Houbara* bustard, which it is taught to strike on the ground when running.* Both species much resemble the *Laggar* in general mode of coloration, but the *Lanner* is said o resemble it most closely. The *Saker* is said to breed in trees, and the egg of one obtained in Africa is figured in the first vol. of the Ibis.

11. Falco Jugger, Gray.

F. luggur, Jerd., Cat. 28—Ill. Ind. Orn., pl. 44 (young female)—Hardw., Ill. Ind. Zool., 2, pl. 26 (adult male)—Gould, Birds of Asia, pl. 1 —F. themophilus, Hodgs., Zool. Misc., 1844—*Laggar* or *Lhagar*, H. (the female); *Jhagar* or *Jaggar* (the male)—*Lagadu*, Tel.

The Laggar Falcon.

Descr.—Young bird brown above, with the head yellowish fawn color, with some dark brown streaks; chin and throat white, the rest of the body beneath brown; under tail coverts dirty fawn color, with some faint brown bars; cere and legs bluish. The light color of the head is not present in all birds, and appears to be most general in males.

Adult.—Plumage above dusky ashy or slate color; head (in some) rufous, with faint brown streaks; tail pale dusky cinereous, with pale rufous bars on the inner webs, and a pale tip; plumage beneath, from chin to lower abdomen, white; lower abdomen and thigh coverts reddish brown; under wing coverts chiefly brown, a little mixed with white. In the bird of the second year the breast and upper part of abdomen becomes white with brown drops, and at each successive moult more of the brown beneath disappears, the back becomes more cinereous, and the head more rufous.

Cere and legs yellow.

Length of a female 19½ inches; wing 15½; tail 8; tars. 2; weight 1lb. 4oz. A male measures 16 to 17 inches.

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* Since the above was printed I have learned from Major Pearse, late Commanding 3rd Sikh Cavalry, that the *Chargh* is still brought from Hazara, and the Suleiman Mts. and is used to strike the Indian Houbara, *Otis McQueenii*, but always on the wing, and also hares.

The *Laggar* is the most common and generally distributed of the large Falcons of India, being found over the whole continent, from Cape Comorin to the Himalayas, and from Calcutta to Scinde and the Punjab. It is rare in the forest countries of the Malabar coast, and most abundant in open cultivated districts. From my Illustrations of Indian Ornithology, I extract the following notice of the habits of this Falcon. Whilst the *Bhyri* prefers the sea-coast and the neighbourhood of lakes, rivers, and wet cultivation, and the *Shahin* delights in hilly and wooded regions; the *Laggar*, on the contrary, frequents open, dry plains, and vicinity of cultivation. It makes its nest in some lofty tree, generally one standing alone, among some grain fields, and lays four eggs, white, more or less blotched with red and brown. In a wild state it preys on a great variety of small birds, often snatching up a chicken, even in the midst of a Cantonment. It is trained to hunt crows, paddy birds, night herons, partridges, and florikin; and, it is said, has been trained to kill the heron (*A. cinerea*). In hawking crows, *C. splendens* chiefly, it is slipped from the hand; and the crow, when aware of its danger, uses every artifice to escape, taking refuge among cattle, horses, vehicles, and even entering houses. I once had a Laggar, whose wing feathers were burnt off by a washerman's fire, close to which the crow was attempting to take refuge when it was struck. After paddy birds (*Ardea bubulcus*) it is also slipped from the hand, and, as this bird is always found on the plains feeding among herds of cattle, it affords considerable sport by its dexterity in diving among and under the cattle, and the venturous Hawk is occasionally trodden under their feet. When the quarry is a partridge or a florikin, the standing gait is used, as described under the head of *Shahin*. *Laggars*, as well as *Shahins*, are always caught after they have left the nest, and have had some instruction by their parents, our native Falconers considering them better than when taken from the nest, contrary, I believe, to the opinion of our English Adam Woodcocks.

A very nearly allied species is found in Africa, *F. tanypterus*, Licht., which has been considered by some to be the same, but is now generally allowed to be distinct.

12. **Falco babylonicus**, Gurney.

Sclater and Irby, Ibis, vol. 3, p. 218,—F. peregrinator, apud Horsf., Cat. 20 in part.

Red-headed Lanner.

Descr.— Nearly similar to *F. barbarus,* but generally lighter, and rather more rufous on the front of the head: the size, however, in nearly one-third greater, being the same as that of *F. lanarius* of Schlegel. From the latter bird it may be distinguished, 1.—By the absence of the whitish frontal band, the rufous of the vertex extending forwards on to the cere, and being bordered behind by a broad band of dark slaty brown, which divides it from the rufous of the nape. 2.—By the feathers on the back of the neck below the nape being bordered with rufous of the same tinge as on the nape. This edging is sometimes present in *F. barbarus,* but never to the same extent in *F. lanarius.* 3.—By the comparative absence of spots on the upper portion of the lower surface, in which character it nearly agrees with the Abyssinian form of *F. lanarius,* which I take to be strictly Lichtenstein's *F. tanypterus.* The middle claw of *F. babylonicus* is longer than that of *F. lanarius,* in which respect it also approaches to the structure of *F. barbarus.* Judging from the partial remains of the immature plumage in one specimen, it would appear that in this stage the bird most nearly resembles *F. peregrinus,* in which particular it also agrees with *F. barbarus.*

Length, 17 to 18 inches; wing, $12\frac{1}{2}$ to 13; tail, $6\frac{1}{2}$ to 7; tars., nearly 2; mid toe 2.'

A specimen of this newly-described Falcon was obtained by Captain Irby in 1858 in Oude. It appears that one of the specimens named *F. peregrinator,* in the Mus. E. I. C. H., brought from Babylon by Commodore Jones, belongs to this species, and others exist in the Norwich Museum, one said to be from Africa. Mr. Sclater remarks that 'it does not belong to the group of true Peregrines, but rather to that containing *F. lanarius,* Schlegel, *F. tanypterus,* Licht., *F. biarmicus,* Tem., and *F. barbarus,* Salvin.,' *i. e.,* our Lanners.

The Falcons comprising the genus *Ieracidea* of Gould are peculiar to Australia. They are of rather large size; have the bill of the true Falcons; the wings are rather short, with the 2nd and 3rd quills about equal and emarginate; the tarsus somewhat lengthened, with large irregular scales; the toes short, with the laterals nearly equal. Two species are figured by Gould, in his Birds of Australia, and they correspond so closely to the colors of the *Laggar* in its young and adult state, that I strongly suspect they are only different ages of one bird.

The division of Falcons comprising the Jerfalcons, *viz.*, the Iceland and Greenland Falcons, so beautifully figured by Wolf, *Hierofalco*, Kaup., are not represented in India, though apparently one of them is, or used to be, occasionally brought to India, and sold for hawking. It is the *Shankar* or *Shangar* of Indian Falconers; a word taken from the Baschkir Tartar name of the Jerfalcon, according to Pallas. They are Falcons of very large size, with a strong tooth, (which becomes rounded in old birds,) and rather short wings, and the bill much lengthened.

F. subniger, Gray, and *F. hypoleucus* Gould, from Australia, are the only other species placed among these Jerfalcons.

Gen. Hypotriorchis, Boie.

Syn. *Dendrofalco*, Gray.—*Æsalon*, Kaup., partly.

Char.—Of small size. Bill and legs weaker than in true Falco; wings long or moderate; tarsus slightly lengthened; toes unequal, claws not very unequal; tarsal scales larger in front than in Falco, somewhat hexagonal.

This subgenus includes two divisions, the first or *Hobbies* having dark plumage and long wings, with only the first quill emarginate; the second, with lighter plumage, and shorter wings (*the Merlins*) and the two first quills emarginate. These last have been separated under the sub-generic name *Œsalon*.

Hobbies.

—13. Hypotriorchis Subbuteo, L.

Falco, apud Lin.—Jerdon, Suppl. Cat. 29 bis—Blyth, Cat. 68—Horsf., Cat. 26—P. E. 432—Gould, Birds of Europe, pl. 22—*Doureli* H., of some, *Régi* according to others.

The Hobby.

Descr.—Young bird, dark brown above, the feathers edged with ferruginous; cheek stripe darker; beneath whitish, with a rusty tinge, and all the feathers with broad blackish brown spots or streaks; the lower abdomen, thigh coverts, and under tail coverts ferruginous, with a few brown streaks.

Adult, blackish slaty above, rusty white beneath; throat and neck unspotted; breast and abdomen with dark brown streaks, narrow on the centre of the abdomen, wider on the flanks; thigh coverts and under tail coverts pure ferruginous; tail dark slaty, with dark bands; frontal line and narrow stripe over the eye pale rusty whitish; cheek stripe black, distinctly separated from the dark cheeks and ear coverts; quills barred internally with light rufous; cere and legs greenish yellow.

Length of a female $12\frac{1}{2}$ inches; wing $10\frac{3}{8}$; tail $5\frac{1}{2}$: the wing nearly reaches to the end of the tail. A male measured $10\frac{3}{4}$ inches; wing $9\frac{3}{8}$; tail $5\frac{1}{4}$.

The Hobby is a winter visitant to India, and is not very common, though occasionally killed in different parts of the country. I have killed it near Jalna, and it has been taken at Calcutta and in various parts of the Himalayas. Its prey is small birds, larks, &c, and also not unfrequently insects. The one I shot near Jalna had its stomach crammed with dragon flies, which I had seen it hawking over a tank just after sunset. It is stated occasionally to be seen in flocks, and to fly about at dusk. It does not breed in this country. In Europe it builds on trees, occasionally taking possession of an old crow's nest. It used to be trained to hawk quails and larks in Europe. I believe it to be the *Regi* of Indian Falconers.

14. **Hypotriorchis severus,** Horsf.

Falco, apud Horsf., L. T. XIII.—Falco Aldrovandi, Temm., P. C., 128—F. rufipedoides, Hodgs. C. J. N. H., IV. 284—Blyth, Cat. No. 67—Horsf., Cat. 24—*Dhuti*, H. (the female); *Dhuter* (the male).

The Indian Hobby.

Descr.—Young bird, dusky blackish, with a grey tinge; lores, cheeks, and ear coverts nearly black, confluent with the cheek stripe;

centre tail feathers barred black, the others with eight or nine rufous bars on their inner webs; throat and neck fulvous white; the rest beneath deep ferruginous, palest on the breast, with medial brown spots on the feathers.

Adult, dark slaty blue above, black on the cheeks and ears; beneath deep rusty red, unspotted; cere, orbitar, skin, and legs reddish yellow; bill plumbeous.

Tail short, nearly square; wings very long, exceeding the tail; feet large. Length of a male $10\frac{1}{2}$ inches; wing 9; tail $4\frac{1}{2}$.

This little Falcon is chiefly an inhabitant of the Himalayas, a few only visiting the plains during the cold weather, and not extending their migrations far South. I have never met with it in the South of India, but procured it at Darjeeling. It appears to be spread over the Eastern parts of Southern Asia, having been procured in Java, the Philippines, and the Malayan Peninsula. Mr. Blyth has obtained several specimens from the vicinity of Calcutta. It is said to breed on trees.

F. Frontatus, Gould, is a nearly allied species of Hobby from Australia.

MERLINS.

15. **Hypotriorchis Œsalon**, GMEL.

Falco, apud GMELIN—F. lithofalco, Auct.—BLYTH, Cat. 75—HORSF., Cat 28—P. E. 447—GOULD, Birds of Europe, pl. 24.

THE MERLIN.

Descr.—The young bird has the head rufous, with dark streaks; the rest of the plumage above brown, tinged grey, with dark shafts, and pale rufous edges; quills dark brown; tail ashy brown, barred with rufous: the chin is white, the rest of the plumage beneath pale ochry white, with broad brown marks, reduced to lines on the thighs and under tail coverts.

The adult has the upper plumage fine blackish grey, darkest on the crown, and reddish, mixed with white, on the nape; ears yellowish grey; quills blackish brown; tail grey, with a broad black band white-tipped at the end: chin and throat white; the same tinged with ochry on the breast, and with reddish orange on the abdomen, with dark brown spots. The female is said to be browner

than the male, with the markings more rufous, and the lower parts ochry white, tinged with rufous on the breast, and the spots larger and more numerous.

Length of a female 13¼ inches; wing nearly 9; tail 5½: the wings reach to about 1½ inches from the end of the tail, which is very slightly rounded. A male was 11¼ inches; wing 8; tail 5.

The third quill feather is about equal to the second.

The *Merlin* appears a very rare visitant to the extreme north west frontier of India, during the cold season only. Dr. Adams observed it in the north west of the Punjab. Mr. Blyth, in his Catalogue, gives the north west Himalayas with a query.

It is found in Europe and Western Asia, and used to be trained to hunt quails, larks, and even snipe, in England. It is said to follow the quarry very closely, and to be a bird of great activity and speed. In these particulars it resembles the next one. It is said to breed on the side of some ravine, on a rock, or bank.

16. Hypotriorchis Chicquera, Daud.

Falco, apud Daudin—Sykes, Cat. 14—Horsf., Cat. 27—Blyth, Cat. 66—Jerdon, Cat. 30—Gould, Him. Birds, pl. 2—*Turumti, Turumtari, Turumti,* and *Tutri mutri,* Hind, (the female)—*Chetwa,* (the male)—*Jellaganta,* or *Jelgadda,* Tel.—*Jelkat* of the Yerklees.

The Turumti, or Red-headed Merlin.

Descr.—Young bird, head, nape, and moustache dark dusky rufous, with dark mesial lines; the upper parts grey, with dark markings to all the feathers; quills darker; tail with numerous bars, and a broad black terminal band; beneath white, more or less tinged rusty, with some streaks on the neck and breast, and broadish bars on the abdomen and thigh coverts.

Adult, head, nape, and cheek stripe, bright rufous; the rest of the plumage above fine pale grey; quills dark slaty; tail light grey, with a broad black terminal band, white tipped at the end; beneath white, unspotted to the breast, all the rest of the lower parts with narrow cross bands of dusky grey; quills with the inner webs banded dusky and whitish; tail with narrow cross bars, conspicuous beneath, not seen above; cere, orbitar skin, and legs, bright yellow.

Length of a female 14 to 15 inches; wing 9; tail $5\frac{1}{2}$. A male is 11 to 12 inches; wing $7\frac{8}{10}$; tail $4\frac{3}{4}$. A male weighed 6 oz., a female $9\frac{1}{4}$ oz.

The wings do not reach further than $1\frac{1}{2}$ inches, or $1\frac{3}{4}$ of the end of the tail in the female; the tail is distinctly rounded.

The specific name *Chicquera* has been erroneously applied to this Falcon, as it is the Hindustani name for the common sparrow-hawk of India.

The *Turumti* is universally spread throughout India, from north to south, but is rare in the forest districts, as it affects chiefly open country in the vicinity of cultivation. It frequents gardens, groves of trees, and even large single trees in the open country, whence it sallies forth, sometimes circling aloft, but more generally, especially in the heat of the day, gliding with inconceivable rapidity along some hedgerow, bund of a tank, or across some fields, and pouncing suddenly on some lark, sparrow, or wagtail. It very often hunts in pairs, and I have now and then seen it hover like a Kestril for a few seconds. It preys chiefly on small birds, especially the social larks (*Coryphidea calandrella*), sparrows, and the small ringed-plovers (*Charadrius*); also not unfrequently on bats, which I have seen it seize on the wing just at dusk. It breeds on high trees, and has usually 4 eggs of a yellowish brown color, mottled with brown spots. The young fly early, by the end of March or beginning of April. It has a shrill angry scream, and is very courageous, driving away crows, kites, and even the *Wokhab* (*Aquila fusca*,) from the vicinity of its nest or perch.

It is occasionally reclaimed, and flown at quail, partridges, mynas, but especially at the Indian Jay or Roller (*Coracias indica*). In pursuit of this quarry the Falcon follows most closely and perseveringly, but is often baulked by the extraordinary evolutions of the Roller, who now darts off obliquely, then tumbles down perpendicularly, screaming all the time, and endeavouring to gain the shelter of the nearest tree or grove. But even here he is not safe; the Falcon follows him from branch to branch, drives him out again, and sooner or later the exhausted quarry falls a victim to the ruthless bird of prey. I have known Falconers train the *Turumti* to hunt in couples.

The Indian name, *Turumti*, appears to owe its origin to *Turumtai*, given by Pallas as the Calmuc name of the Hobby.

A very nearly allied species of Merlin exist in Africa, F. *ruficollis*, Sw., *chicqueroides*, A. Smith, long considered as the same, but now recognized as distinct by Hartlanb and others. Kaup., P. Z. S. 1851, calls it a sub-species of the other, differing in its darker colours, more striped head, and with the cheek stripe darker and more distinct.

Gen. Tinnunculus, Vieill.

Of small size; bill as in *Falco;* wings moderate, or rather long, with the first and second quill emarginated; tail long, rounded, tarsus somewhat lengthened, stout, with a series of large hexagonal, scales in front; feet small; outer and inner toes nearly equal, claws sub-equal; plumage soft.

The Kestrils form a well-marked group of small Falcons, easily recognised by a peculiar style of coloration. The sexes, when adult, generally differ remarkably in colour. They are found all over the world. The falconine structure is less strongly marked, the sternum is weaker, and their habits proportionally less rapacious and more insectivorous.

17. **Tinnunculus Alaudarius**, Briss.

Falco, apud Brisson—F. tinnunculus, L.—Sykes, Cat. 13—Jerdon, Cat. 31—Horsf., Cat. 11—Blyth, Cat. 69—F. interstinctus, M'Clell, P. Z. S. 1839—P. E. 401, 411—Gould, Birds of Europe, pl. 26.—*Narzi* (the female), *Narzanak* (the male) Hind., in the South of India—*Khermutia* or *Kurrontia*, in the North—*Tondala muchi gedda*, Tel., *i. e.* Lizard-killing Kite,—also *Tondala doshi gadu.*

The Kestril.

Descr.—Female (and young male). Above of a reddish vinaceous colour, with long dark stripes on the head and neck, broadish bars on the back and wing coverts; tail with numerous dark bars, and a broader one at the end, white tipped; cheek stripe dark, of small extent; ears hoary; plumage beneath reddish ochraceous, with numerous and close brown spots.

The adult male has the forehead yellowish; head, nape, and tail fine ashy grey, the latter with a broad black band, and the former sometimes tinged black; mantle and wing coverts vinaceous, with some black heart-shaped spots; beneath creamy or rusty with spots of brown, linear on the breast, oval on the abdomen, and heart-shaped on the sides; the under tail coverts are unspotted; quills brown, with white bands or spots on the inner webs.

Length of a female 15 inches; wing $10\frac{3}{4}$; tail 7. A male measures 13 to 14 inches; wing 10; tail $6\frac{1}{4}$. The wings do not reach to the end of tail by $1\frac{1}{4}$ to $1\frac{1}{2}$ inches; the second quill is the longest.

The Kestril is a cold weather visitant to India, one of our earliest, indeed; and it does not leave till April. It is most abundant, being found in every part of the country, and at all elevations. Its chief food is lizards, but it also eats rats and mice, insects, especially grasshoppers and locusts, and rarely young or sickly birds. It constantly hovers over a spot where it has observed something move, and when certain of its presence, drops down on it with noiseless wing. Blyth mentions that parties of twenty or thirty individuals may be seen together beating over the cultivated lands in Lower Bengal. This I have never witnessed. It does not breed in this country. Dr. Horsfield in his Catalogue, apparently quoting from Mr. Blyth, says,—"It breeds in April in lofty trees, and also on the top of minarets." I imagine he must have been quoting from some other naturalist, not an observer in India. In England it breeds on shelves of rocks, in ravines; also in old ruined buildings, churches, &c.

It used to be trained occasionally in Europe to hunt larks, quails, and other small birds, but it is scouted by the Indian Falconers as an ignoble race.

Gen. Erythropus, Brehm.

Syn. *Tinnunculus*, pars, Gray,—*Tichornis*, pars, Kaup.

Bill as in *Falco*, but small. Wings long, only the first quill emarginate; tail moderate, rounded; tarsus with some larger scales in front; outer toe scarcely longer than the inner one; claws subequal, pale. Sexes, when adult, differ in colour. Size small.

This type may be considered a subordinate one to *Tinnunculus*, from which it chiefly differs by its longer wings, and more equal, pale claws. It is more exclusively insectivorous than *Tinnunculus*.

18. **Erythropus Cenchris**, Naum.

Falco, apud Naumann—F. tinnunculoides Auct.—Horsf., Cat. 12—Blyth, Cat. 72—Gould, Birds of Europe, pl. 29.

The Lesser Kestril.

Descr.—Young bird and female colored very like a female Kestril; the cheek stripe is wider, and the spots beneath are broader; the quills barred internally with rufous; tail with numerous blackish bands, with a terminal dark band, not so broad as in the last.

The adult male has the head, wing coverts, and tail, fine blue grey, without any bands; the back, mantle, and wing coverts, vinaceous red; quills black, not barred nor spotted; beneath, pale vinous, lightest on the throat and under tail coverts.

Length of a female 13 inches; wing $9\frac{1}{2}$; tail $6\frac{1}{4}$. A male measures about 12; wing $9\frac{1}{4}$; tail $5\frac{1}{2}$. Cere, orbits, and legs yellow; claws yellowish white; irides deep brown.

I have only hitherto, that I am aware of, seen this Falcon on the Neilgherries, where I found it breeding on some cliffs in May and June. I find from Mr. Blyth that it visits Bengal during the rains. Dr. Adams met with it in Cashmere, and found it feeding on the mountain pipit. Not much is recorded of its habits, but it is known to be insectivorous, and has been seen seizing insects on the wing, and pulling off the elytra of beetles. In Palestine it is said to breed in company on ruins and old buildings. It is also said, like *Vespertinus*, to be very social.

19. **Erythropus Vespertinus**, Lin.

Falco, apud Linnæus—Horsf., Cat. No 13—Blyth, Cat. 74—Jerdon, 2nd. Suppl. Cat., 30 bis—P. E., 431—Gould, Birds of Europe, pl. 23—*Karjanna* or *Karjoona*, Hind.

Red Legged Falcon.

Descr.—Young bird above dark slaty grey, some of the feathers centred and tipped darker; tail light grey, obsoletely barred; ocular region and cheek stripe nearly black; narrow frontal band, supercilium, lores, ear feathers, and sides of the neck and throat white; breast and abdomen rusty white, with blackish brown marks, longitudinal on the breast, heart-shaped on the sides, and arrow-like on the centre of the abdomen; vent, under tail coverts, and thigh coverts, pale unspotted rusty; bill fleshy red, with a dusky tip; cere and legs deep orange red; claws fleshy; orbitar skin orange yellow.

The adult male has the whole upper plumage unspotted ashy; pale ashy beneath; chin and throat whitish; wings dusky black; thigh coverts, and under tail coverts, bright, rusty red.

Wings slightly shorter than the tail.

Length of a female $11\frac{1}{2}$ inches; wing $9\frac{1}{4}$; extent 27; tail 5. A male was nearly 11 inches long, and had the wing $8\frac{3}{4}$.

Although the adult male in its mode of coloration resembles the Kestrils, especially the lesser Kestril, yet the colors of the young bird and female approach more to that of the Hobbies. Its changes of plumage are not very fully known, and we are unaware if the female ever assumes that of the adult male. It is not common in India, but is generally spread throughout the country. I have killed it on the Neilgherries, in the Carnatic, in Central India; and it is not very unfrequent in Lower Bengal, and the neighbourhood of Calcutta, during the rainy season only. It is found all along the Himalayan range. I procured it at Darjeeling. Out of India it is found in the South of Europe, in Central and Western Asia, and in N. Africa. Not much is known of its habits. Those that I examined myself had partaken of insects only. It is said to be very social, both hunting and breeding in small parties. Fellowes says that it is very common in Asia Minor, building its nests under the roofs, and sometimes even in the interior of houses. According to Pallas it hunts towards the evening, kills spiders, water insects, and occasionally swallows, and breeds in deserted crows' nests.

Gen. Hierax, Vigors.

Char.—Bill short, upper mandible with a sharp tooth, and a notch on each side, often described as a double tooth; wings short, 2nd and 3rd quills equal and longest, slightly notched near the tip; tail rather short, even; tarsus rather short, stout, with large transverse scuta in front; toes scutellated; middle toe not much elongated; anterior claws not very unequal, strong; hind claw large.

These beautiful little falcons, the pigmies of the order, are very little bigger than a sparrow: their sternum is notched posteriorly, and the cranium very large and vaulted. Kaup makes them the pre-eminent or parrot tribe among the Falcons. They are peculiar to India and Malayana.

20. **Hierax Eutolmos**, Hodgs.

Gray's Zool. Misc. 1844—H. bengalensis, apud Blyth J. A. S. B. XII. 180, and Bon.—Horsf., Cat. 15—Blyth, Cat., 78—*Tangpum* Lepcha—*Tingpum mepa,* Bhot.

White-naped Pigmy Falcon.

Upper parts black, glossed with green; wings and tail with the inner webs of the feathers with white spots; forehead, broad superciliary line extending to the nape, and sides of neck and breast, white; chin, throat, abdomen, thigh coverts, vent, and under tail coverts, ferruginous. In some the ferruginous is more marked than in others, especially on the chin and throat.

Length 6 to $6\frac{1}{2}$ inches; wing 4 to $4\frac{1}{2}$; tail $2\frac{1}{2}$; tarsus $\frac{3}{4}$; mid toe and claw nearly $\frac{7}{8}$.

This beautiful little Falcon is found in Nepal, Sikhim, Assam, and Arracan. Their habits are little known. They are said by the natives of the hills to seize small birds, and also insects. The stomach of the only one I procured at Darjeeling was empty. I have never heard that they are trained for hawking, and the bird alluded to by Captain Mundy, considered by Mr. Blyth, (J. A. S., XI., 789,) to be one of these tiny Falcons, I have very little doubt

was the *Dhuti*, or male of the *Besra* Sparrow-hawk, all the birds of which kind are thrown from the hand, exactly as described by Mundy. Buchanan, however, mentions that a small hawk, which he calls *Falco minutus*, very little larger than a lark, was used for hawking by the Pangga Rajah in Rungpore.

H. melanoleucos, Blyth, from Assam, differs in the lower parts, including the thigh coverts, being entirely white. Other species are *H. cærulescens* of Java and Malayana; *H. erythrogenys*, Vigors, from the Philippines; and *H. sericeus* from China.

Harpagus, of S. America, has two teeth in the upper mandible, the tarsi are longer, and have large scales in front, and the wings are shorter. It may be said to lead the way to the short-winged hawks.

Sub-fam. ACCIPITRINÆ, Hawks.

Bill short and stout, curving from the base, with a blunt tooth or festoon in the upper mandible; wings short, rounded; tail longish, ample, and rounded; tarsus long, scutellate in front, or nearly smooth in some; toes long; claws long, curved and acute, unequal; inner claw large.

This family comprises the Sparrowhawks and Goshawks, and is spread over the whole world. They vary in size as much as the Falcons almost, for although none of them are so minute as the *Hierax*, yet none of the Falcons rival the Goshawk in size and strength. The difference of size in the sexes is very much marked in this family. Their flight is often near the ground, and is performed by a few rapid strokes of the wings, alternating with a sailing with outspread wings. They are more arboreal in their habits than the Falcons, hunting in woods, or on the skirts of woods, or along avenues and hedge rows; and they generally seize their prey by a sudden pounce during their flight, not following the quarry to any distance as the Falcons do.

They breed almost invariably on trees. Their changes of plumage according to age are usually from a mottled brown above, to a purer brown or grey; and the markings of the lower surface change from oval drops to transverse bars, or are sometimes gradually obliterated. The eyes of all are yellow, in some with age becoming red; and they are the *Gulab chusm* of Indian

Falconers, *i. e.*, the rose-eyed or light-eyed, as opposed to the Black-eyed, Falcons.

The limits of this family do not appear to me to have been so strictly marked out by systematists as they are by nature. The Falcons and the Hawks, being the most typical groups of the *Falconidæ*, vary less in their forms than the other and more aberrant divisions; and, as far as I can judge, several forms are placed here which more strictly belong to other families. The genus *Herpetotheres*, judging from the figure of its tarsus and feet in Gray's Genera of Birds, cannot well be placed among the hawks; and its short toes and sub-equal claws point out its place as among the *Kites*. Its type is the *Falco cachinnans* of Linnæus. *Geranospija* or *Ischnoscelis* has very long tarsi, and toes of moderate length, with the outer toe the shortest. This structure is of rare occurrence among the diurnal Falconidæ, the only others instances, that I know of, being in *Neopus* and *Pandion*. The Hawk eagles, placed in this family by Horsfield and Bonaparte, in our views, are clearly eagles, as shown by their general structure, and mode of change of colour; and *Morphnus*, also placed here by Bonaparte, either belongs also to the Eagles, or to the Buzzards. *Asturina*, also a South American form, is said by Kaup to be a vulturine type among the Hawks, as shown by its rather long and straight bill, and buzzard-like carriage and habits. In this case it cannot well be placed as a sub-genus of *Astur*.

Gen. ASTUR, Lac.

Syn. *Dædalion*, Sav.

Char.—Bill short, stout, curved from the base, compressed, with a prominent festoon or rounded tooth in the upper mandible, near the middle; nostrils large, oval, oblique, near the culmen; lores thickly clad with minute feathers; wings short, rounded; first quill short, fourth and fifth quills usually equal and longest. Tail long, far exceeding the points of the wings, nearly even, or slightly rounded. Tarsus moderate, or shortish, plumed below the knees for nearly half the length of the tarsus, stout, with large scuta in front and behind; near the knee, posteriorly, the scales are small and reticulated; toes strong, outer toe longer than the inner one, joined

to the middle one; middle toe moderately long; claws well-curved, unequal; inner claw very large, about equal to that of the hind toe.

The Goshawks are typically birds of large size and very robust make. They are very powerful and speedy for a short time, and are remarkably bold. They live chiefly in wooded districts, and are found over all the world. They nestle on trees, laying three or four eggs.

21. **Astur Palumbarius**, Lin.

Falco, apud Linnæus—Pl. enl., 418, 423, 461—Gould, Birds of Europe, pl. 17—Blyth, Cat. 101—Horsf., Cat. 51—Jerdon, 2nd Suppl. Cat., 36, bis—F. Gallinarius, Gmel.—*Baz*, H. (the female); *Jurra* (the male)—*Shahbaz*, in Sindh—(The word *Baz* appears to be the same as the Bucharian or Persian *Baz* and *Basi*, being respectively the names given to the Peregrine Falcon by those people, according to Pallas.

The Goshawk.

Descr.—The young bird is brown above, the feathers edged with a paler hue on the head, indeed often rusty, with a dark central spot; nape whitish; wings and tail light brown, the latter with an ashy tinge, banded with darker brown: beneath rusty white, with long dark-brown streaks throughout; under tail coverts white, with narrow stripes; streak over the eye, and cheeks, also white with brown streaks.

The adult is uniform light brown above, with a greyish tinge; beneath white, with cross bands of rich hair or yellowish brown, and the shafts dark; the thigh coverts are also narrowly banded; the under tail coverts unspotted, white: the tail has three conspicuous broad brown bands, and a fourth indistinct one near the base.

Length of a female 24 inches; wing 14; tail nearly 10.—Weight 2lbs. 14oz. The male is 20 inches long; wing 13; tail 9.

The *Goshawk* is found in the Himalayas, and I think also on the Neilgherries, though rare there. If it ever occurs in the plains, it is only a straggler, or a bird of passage. I saw, on more than one occasion on the Neilgherries, near the top of Dodabet, the highest hill of the group, a large bird of prey, dashing impetuously into a

thick wood. Its manner of flight, and the way with which it dived into the wood, made me conclude at once that it was a Goshawk. The only other large bird of prey that I could have mistaken it for is the Buzzard, a bird of very different flight.

The *Baz* is the most highly esteemed bird of prey in India, and a trained bird used to be sold for a large sum in former days. They are caught when young, and sold on the skirts of the N. W. Himalayas, to falconers from different parts of India, for prices varying from 20 to 50 Rs. for the female, and from 10 to 20 or 30 for the male. The *Baz* is trained to strike the *Houbara* bustard, Kites, and *Neophrons*, Duck, and many other large water birds, as Cormorants, Herons, Ibises, &c. It is, however, chiefly trained to catch hares. For this purpose she is booted or furnished with leather leggings to prevent her legs being injured by thorns, as the hare generally drags the hawk some yards after being struck. She strikes with one leg only, and stretches the other one out behind to clutch grass, twigs, or any thing on the ground, to put the drag, as it were, on the hare. The *Jurra* is trained to strike partridges, rock pigeon, crows, teal, &c., &c. The Goshawk flies direct at its prey, and gets its speed at once; and if it does not reach the quarry within a reasonable distance, say from 100 to 200 yards, it generally gives up the chase; and either returns to the falconer's fist, or perches on some neighbouring tree, or on the ground.

In a wild state the Goshawk is said to be very destructive to pheasants and other game birds. It breeds on trees, laying from two to four eggs. It is found throughout the wooded parts of Europe and Asia, and is occasionally killed in Scotland. A nearly allied species is *A. atricapilla* of N. America, and other species are found in all countries. One of the most remarkable is the white Goshawk, *A. novæ Hollandiæ*, pure white.*

Sub.-gen. Lophospiza, Kaup.

Merely differs from *Astur* by being smaller and crested, and the posterior scuta of the tarsus extending to the knee.

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* Pallas notices a white Goshawk as found in the extreme N. E. part of Asia.—Can this be the Australian bird?

22. **Astur (Lophospiza) trivirgatus**, Temm.

Falco, apud Temminck, Pl. col. 303—Blyth, Cat. 102—Horsf., Cat. 52—As. indicus, Hodgs.—Jerdon, Suppl. Cat. 36—Spizaetus rufitinctus, McLelland—A. cristatus, Gray—A. palumbarius, apud Jerdon, Cat. 36.—*Gor-besra*, H., *i. e.*, Mountain Besra, sometimes also called *Manak besra*, and *Koteswar*—*Churiali*, of the Eastern Terai—*Jamal kathi*, also *Jurye*, in Nepal—*Kokila dega*, Tel., *i. e.* Cuckoo Hawk, (from the resemblance of the lower plumage to that of the *Eudynamys orientalis*).

The Crested Goshawk.

Descr.—The young bird is brown above, with pale edgings to the feathers; eyebrows white, and some white or rufous about the nape; below white, more or less spotted on the breast abdomen, and flanks with dark brown spots, least numerous in the male; tail pale ashy brown, with four or five dark broad bands; thigh coverts with transverse brown bands; a narrow dark line down the centre of the chin and throat; and two more, one on each side of the neck, not very distinct in the male, but becoming more so with age; an occipital crest of several elongated feathers; under wing coverts white, with brown spots; quills, and tail, beneath, light cinereous, with dark bands.

The adult bird has the upper plumage glossy dark brown, in some with an olivaceous tinge, in older birds with a dark slaty hue, especially when freshly moulted; wings and tail banded, the latter with four distinct dark bands; beneath white, the throat, and upper part of the breast, with pale yellow brown oval spots; the rest of the plumage beneath barred with rich yellow brown; the bars broad on the breast, belly, and flanks; narrow on the thigh coverts, but all becoming more narrow by age.

Irides bright yellow; legs pale yellow; cere lemon yellow. Length of a male 16 inches; wing $8\frac{1}{2}$; tail 7; tars. $2\frac{2}{10}$. A female was $17\frac{1}{2}$ inches; wing $9\frac{1}{2}$; tail 8; tarsus $2\frac{1}{2}$. A large female from Darjeeling measures above 20 inches; wing $11\frac{1}{2}$; tail 9.

The *Gor-besra* is found in all the hilly and wooded regions of India, on the Himalayas, the Neelgherries, and occasionally on both the Eastern and Western Ghâts. It is not very rare in the

Neelgherries, and occasionally commits depredation on pigeons and chickens, making a pounce on them from a considerable height. In general it keeps to the woods or their skirts, dashing on birds sometimes from a perch on a tree, but generally circling over the woods, and making a sudden pounce on any suitable prey that offers itself. It hunts very usually in pairs. I did not find it breeding, but Layard asserts that it breeds on rocks in Ceylon; that it is a bold and daring bird, robbing hens' roosts; and that it is trained in Ceylon. It used, indeed, to be so in India formerly; but I have never seen a trained one here. It was taught to strike partridges chiefly. McLelland must have been greatly misinformed by the natives, when he says it "conceals itself in bushes and grass along the edge of the water, seizing such fishes as approach the surface within its reach." This might be the case with *Poliornis teesa*, a bird of about the same size as this Goshawk, and for which it was probably taken by his native informant.

Gen. Micronisus, Gray.

Syn. *Nisastur* Blyth.

Char.—Bill short, curving from the base, moderately compressed, the festoon not remarkably prominent; tail moderately long, not very slender; tarsus comparatively short, stout, with prominent scuta in front, and a few behind, and the reticulated scales on the sides very distinct; toes short, stout; inner toe about equal to the hind toe.

These Hawks are found in the hot parts of the Old World, and differ from the true Sparrow-hawks in their stouter make, shorter tarsus and toes, and also in coloration. They are birds of much less bold and daring disposition in their wild state, and less speedy than the true Sparrowhawks, living a good deal on reptiles; but they are very docile, and by good training become very courageous.

23. **Micronisus badius**, Gmel.

Falco, apud Gmelin—Blyth, Cat. 98—Horsf., Cat. 48—Jerdon, 2nd Suppl. Cat. 32—Falco Brownii, Shaw—Brown, Ill. Zool., pl. 3.—F. Dussumierii, Tem., Pl. col. 308—326—A.

dukhunensis, SYKES, Cat. 10—JERDON, Cat. 32—A. scutarius, and A. fringillaroides of HODGSON—Astur bifasciatus, PEALE—*Shikra* (the female); and *Chipka* or *Chippak* (the male) H.—*Kathia* (the female) and *Tunna* (the male,) in Nepal—*Jali dega*, Tel.—*Chinna wallur*, Tam.

The SHIKRA.

Descr.—The young bird is dark reddish, or dusky brown above; the feathers edged with rufous, most broadly so in the male; back of the head and nape a good deal variegated with white; tail light ashy brown, with six dark bands; beneath white, with a central dark chin line; the breast and abdomen with large oval brown spots, longer on the breast, rounded on the abdomen; the thigh coverts rufescent white, with smaller spots; under tail coverts with a very few faint stripes. The male has usually fewer spots than the female. Irides pale yellow; feet yellow; bill bluish, dusky at the tip; and the cere yellow.

The adult bird is pale ashy grey above, darkest on the head, and with a dusky reddish nape, only conspicuous when the head is bent forwards; tail, with the two centre feathers, and the two outer ones not barred, the others only barred on the inner webs; quills blackish grey, with some dark narrow bands on the inner webs. Beneath white, with a faint chin stripe, not always present; breast and upper abdomen closely barred with pale rufescent fawn-colored transverse marks; the lower abdomen, thigh coverts, and under tail coverts pure white; irides deep orange color; cere bright yellow; feet dark buff yellow.

This plumage is not assumed before the fourth or fifth year, and the intermediate changes may be said to consist in the upper plumage becoming more uniform and ashy; the longitudinal drops beneath changing to transverse bars, gradually becoming lighter, and with age disappearing in some parts; and in the bars of the tail also gradually being obliterated.

Length of a male $12\frac{1}{2}$ inches; wing $7\frac{1}{2}$; tail $5\frac{1}{2}$. A female is 14 to 15 inches long; wing $8\frac{1}{4}$; tail 7; tarsus nearly 2; middle toe $1\frac{8}{10}$.

Weight of a male 5 to 6oz.; of a female $8\frac{1}{2}$ to $9\frac{1}{2}$oz.

The *Shikra* is very common throughout the whole of India, spreading to Ceylon, Assam, Burmah, and Malayana; also to

Afghanistan, and probably other parts of Asia. It frequents open jungles, groves, gardens, and avenues. It either takes a low stealthy flight along the edges of a wood, garden, or hedge row, and pounces on any unwary bird or lizard, or soars high in circles and pounces down when it sees any prey. Its general food appears to be lizards, but it frequently seizes small birds, rats or mice, and sometimes does not disdain a large grasshopper. It is more commonly trained than any other hawk in India. It is very quickly and easily reclaimed, and, though not remarkable for speed, can yet seize quails and partridges if put up sufficiently close. It is, however, a bird of great courage, and can be taught to strike a large quarry, such as the common crow, the small grey hornbill, the crow pheasant, (*Centropus*), young pea fowl, and small herons.

The *Shikra* breeds on trees from April to June, making a large nest of sticks; and has usually four eggs, white, much blotched with reddish brown.

It is exceedingly closely allied to *A. sphenurus*, Rüppell, of N. Africa, to *A. brachydactyla*, of Western Africa, and to *A. polyzonoides*, Smith, of Southern Africa; but, according to Sclater, is distinguishable from all. These hawks, of course, appertain to *Micronisus*. There is another species from Malacca and the Isles, *M. Soloensis* (Horsf.), also very closely allied, but smaller, and otherwise distinguishable.

Gen. Accipiter, Brisson.

Syn. *Nisus*, Cuv.

Char.—Bill very short, curving from the base, compressed, with a very prominent festoon in the middle of the edge of the upper mandible; nostrils oval, oblique; wings rounded, the 4th and 5th quills nearly equal; tail long, slightly rounded or even, slender; tarsi long, slender; the scuta very smooth, and scarcely perceptible; toes long, slender; the inner toe considerably shorter than the outer one, but longer than the hind toe; claws well curved.

This genus differs from the last by its more slender form, longer tail, longer tarsus and toes; and the birds comprising it are more active and speedy, and in the wild state more bold and destructive Species of this genus are found all over the world.

24. Accipiter Nisus, LIN.

Falco, apud LINNÆUS—BLYTH Cat. 94—HORSF., Cat. 43., P. E. 467, 412—Gould, Birds of Europe, pl. 18—A. fringillarius, RAY—JERDON, Suppl. Cat. 33—A. Dussumierii, apud JERDON, Cat. 33—*A* nisosimilis, TICKELL—A. subtypicus, HODGS.—*Basha* (the female)—*Bashin* (the male), Hind.—*Warnapa dega*, Tel.—*Tanki*, Lepch.—*Uchum*, Bhotia.

THE EUROPEAN SPARROW-HAWK.

Descr.—Young bird yellowish brown above, the feathers edged with ochrey, not much so in female; the quills banded on their inner webs, and the tail with four bands; beneath ochrey white, with brown longitudinal streaks on the chin and throat, changing to bars on the breast, lower abdomen, and thigh coverts.

The adult is blackish or brownish grey above, white on the eye-brow and nape; the quills brown-banded, and the tail more ashy and lighter, with four bands, the last widest and with a white tip, the others somewhat indistinct in very old birds; the throat and chin pale ochrey white, with brown stripes; the rest of the plumage beneath white, the feathers with brown shafts, and densely banded with reddish ochrey, in some specimens quite rusty: under tail coverts pure white.

The adult female differs somewhat from the male in being paler and browner above, and in the lower parts being whiter, with the bars and markings more narrow.

Iris golden yellow, legs pale yellow.

Length of a male 12 to 13 inches; wing $8\frac{1}{2}$; tail 6; tars. $2\frac{1}{4}$. A female measures 15 to 16 inches; ext. 25; wing $9\frac{1}{2}$; tail $7\frac{1}{2}$; tarsus $2\frac{1}{2}$; mid toe $1\frac{3}{4}$.

The sparrow-hawk of England is a cold weather visitant to India, coming in very regularly about the beginning of October, and leaving again about the end of February or March according to the locality. It is found throughout India in suitable places, chiefly in hilly and jungly districts, but not in dense forests in general. I have got it on the Neilgherries, abundant on the Eastern Ghauts, where many are caught every year, and in all the hilly

countries of Central India, and on the Himalayas. At Darjeeling it may frequently be seen in cleared ground, circling about on the watch for any bird that may pass over.

It is very highly prized by the natives for falconry, being very speedy; and is used to capture partridges, quails, courier plovers (*Cursorius*), and even rock pigeon (*Pterocles*).

25. Accipiter Virgatus, Tem.

Falco, apud Temminck, Pl. col. 109—Blyth, Cat. 96—Horsf. Cat. 46—Acc. besra, and A. fringillarius, Jerdon, Cat. Nos. 34 and 35—Jerdon, Ill. Ind. Orn., pl. 4, (young male,) and 29, (adult female)—A. affinis. Hodgson—A. dussumierii, apud, Sykes, Cat. 11—*Besra* (the female), *Dhoti* (the male), Hind.—*Vaishtapa dega*, Tel.—*Ur-chitlu*, Canarese of the Halapyks.

The Besra Sparrow-Hawk.

Descr.—The young bird is dark brown above, the feathers edged paler and rufous, tinged with dusky on the cheeks and ears; tail light brown, with dark bars; beneath white, with a mesial throat stripe, and broad oval brown drops on the breast and abdomen, most numerous in the female.

The adult bird has the plumage above deep and glossy olive brown, with a blackish or slaty tint; the head and neck dusky black; ears and face light dusky; the tail light greyish, with four dark bands on the centre tail feathers, and six on the outer ones; throat white, with a mesial blackish stripe, and a few streaks of the same; the rest of the lower parts white, very closely banded with bright ferruginous brown, mixed with dusky brown; under tail coverts pure white. With increasing age the brown of the upper parts become dark slaty, blackish on the head, and light on the tail, and the transverse bands of the breast tend to coalesce, and the lower belly to become whiter. In the female, after the first moult, the breast is marked with oval light yellow brown drops, and the abdomen with broadish bars.

The adult male differs from the female in being more grey on the upper parts; in the breast and flanks being almost ferruginous,

and in the bands on the lower belly, and thigh coverts, being fewer and lighter in tint,

Irides bright yellow; cere pale lemon yellow; legs and feet greenish yellow.

Length of a male about 11 inches; wing $6\frac{3}{4}$; tail 5; tars. 2. A female measured $14\frac{1}{2}$; wings $8\frac{1}{2}$; tail $6\frac{1}{2}$; tars. $2\frac{1}{4}$. A male weighed $5\frac{1}{4}$oz.; a. female 7oz.

The *Besra,* or Jungle Sparrowhawk, is comparatively rare, though well-known throughout India to all who take an interest in hawking. It is found in all the large forests of India; in the Himalayas, on the slopes of the Neelgherries, in the Malabar forests, and here and there on the Eastern Ghâts, and the forests of Central India. It extends to Assam, Burmah, Malayana, and the Isles. After the breeding season is over, about July, a few birds, usually young ones, straggle to various portions of the more wooded parts of the country. Mr. Elliot says he has only met with it in the Soonda Jungles (in Canara.)

The Besra and other short-winged Hawks, as well as occasionally the Lugger and some of the Falcons, are usually caught by what is called among Falconers the Do Guz. This is a small thin net from four to five feet long, and about three feet broad, stained of a dark colour, and fixed between two thin pieces of bamboo by a cord on which it runs. The bamboos are fixed lightly in the ground, and a living bird is picketed about the middle of the net, and not quite a foot distant from it. The Hawk makes a dash at the bird, which it sees struggling at its tether, and in the keenness of its rush, either not observing the net from its dark colour, or not heeding it, dashes into it, the two side sticks give way, and the net folds round the bird so effectually as to keep it almost from fluttering.

The Besra is said to be somewhat more difficult to train than most of the Hawks, and it is a delicate bird, and requires great care and attention, especially during the hot season. It is highly esteemed among native Falconers, and sells for a considerable price. It is very speedy, and is particularly active and clever in jungle, being a denizen of the forests in its wild state. It is chiefly flown

at the partridge, which it seizes in general with great ease and certainty; also occasionally at quails, snipes, and doves. The male or *dhoti*, is but seldom trained, and is then flown at sparrows, brahminy mynas *(Pastor pagodarum)*, and other small birds.

From the concurrent testimony of all falconers in India, there is another species of Sparrow-hawk, well known as the KHANDESRA, occasionally found in certain parts of the country. Among other localities pointed out to me, as occasionally resorted to by this hawk, is the tract of jungly country in South Arcot and Chingleput, bordering on Tanjore and Trichinopoly. Here this hawk has been captured within the last twenty years, according to my informants; but I was unable to procure one, in 1843, when I sent my Meer Shikar there for that purpose. It is stated to be a migratory bird, only found occasionally. It is known to the Telugu Meer shikars, as *Kansara-pu-dega*. It is very probably Blyth's *A. nisoides*, Cat. 95., J. A. S., XVI., 727., which differs from *A. Nisus* in its smaller size, in the throat being streakless white, except a narrow median line, and the usual lateral lines, which, however, are very inconspicuous. Length of wing 7¼ inches; tail 5½.

It may, however, be *Micronisus soloensis*, said by some writers to have been taken on the Coats of Coromandel.—

Other species of Sparrow-hawk are found all over the world.

Melierax is an African type, with the tarsus very long and reticulated, with a series of larger scales in front, and is certainly an aberrant form. The male of the best known species, M. *musicus*, is said, but probably erroneously, to sing.

Sub-Fam. AQUILINÆ.—Eagles.

Bill strong, more or less lengthened, straight at first, curved towards the point; wings moderate or long, 4th quill usually the longest; tail moderate or rather long; tarsus rather long, stout, bare, or feathered; toes moderate, strong; claws well curved. Of large size and robust make.

The Eagles are the largest of all the Falconidæ, and contain within themselves several distinct types, so that it is difficult to give general characteristics of the whole family. As a whole, they

are much inferior in courage to the Falcons and Hawks, though superior in this respect to the Kites and Buzzards. They are much on the wing, hunting for their prey, and nestle both on cliffs and on trees. They may be divided into the following groups:—True Eagles,—Kite Eagles,—Hawk Eagles,—Serpent Eagles,—and Fishing Eagles.

1st.—True Eagles.

Gen. Aquila.

Char.—Bill strong, more or less lengthened, straight at the base, arching downwards towards the tip, which is moderately hooked; upper mandible with the margin somewhat sinuate; nostrils oblique, oblong; wings long, with the 4th and 5th quills sub-equal and longest; tail moderate or long, rounded or graduated; tarsus moderately long, feathered to the toes; toes with reticulated scales, with some large scuta near the claws, which are of moderate size and curvature; the hind toe and claw powerful; the outer toe joined by a small web to the middle toe.

These are the typical Eagles, and are the largest of the family; but they vary greatly in size. They are usually birds of plain and dark plumage, and have dark irides. The largest of them destroy various quadrupeds, but few of them disdain food that has not been killed by themselves, and some feed greedily on carrion.

16. Aquila Chrysaetos, Lin.

Falco, apud Linnæus—Gould, Birds of Europe, pl. 6—Blyth, Cat. 109—Horsf., Cat. 57—F. niger, Gmel.—F. Melanonotus, Lath.—A. daphænia, Hodgson—A. nobilis, Pallas.

The Golden Eagle.

Descr.—Adult rich dark umber brown, glossed with purple on the back and wings; the feathers of the hind head and nape lanceolate, pale orange brown, having a golden appearance in the sunshine; shoulders, thigh coverts in front, and leg coverts with a tinge of the same; quills blackish brown, white towards the base on the inner webs, and clouded with greyish black; tail nearly square, the centre feathers somewhat elongated and narrowed,

greyish brown, with numerous dark markings and cloudings, or dusky brown with numerous grey mottlings on the inner web, especially towards the base, almost white on the base in young birds.

Irides clear orange brown; cere and feet yellow.

Length about 3 feet to 40 inches; extent 8 feet; wing 28 inches; tail 17; tarsus $4\frac{1}{4}$; mid toe and claw $4\frac{1}{4}$; bill at gape $2\frac{1}{2}$; height $1\frac{1}{4}$.

The 4th quill is the longest; the inner claw is longer than the centre one, but the hind claw is the largest; the nostrils are oval, nearly transverse; the wings do not reach nearly to the end of the tail.

The young bird has the plumage generally of a much lighter shade, the tail almost pure white, except at the tip, which is broadly dusky black, and a good deal of white on other parts, viz., on the primary quills, secondaries, and at the roots of many of the body feathers, especially on the upper tail coverts. This white is gradually overcome by the occurrence of bars and cloudings, and by the third or fourth year the plumage is perfected.

This magnificent Eagle is found but rarely in India, and only, I believe, on the Himalayas. Sykes' Golden Eagle (Cat. No. 7) is not referred to by Horsfield in his Catalogue, and was most probably the next species, as my supposed Golden Eagle (Cat. No. 9) undoubtedly was. (At Simla and the North-Western Himalayas the Lammergeyer is often called the Golden Eagle.) Its habits in Europe are well known. It breeds on steep cliffs, and lays two eggs white, with brown and purplish blotches.

The golden Eagle is found over the greater part of Northern and Central Europe, Asia, and America. In Central Asia it is trained by the Kirghises and other tribes, to kill antelopes, foxes, and even wolves, it is said; and is held in the highest esteem by all the tribes of Central Asia. It is carried on a perch between two men, or fixed on a horse. It is said to seize the smaller animals with one foot, and drag the other on the ground, but fixes on the head and neck of the larger animals. It is named *Berkut* or *Bjurkut* by the Tartars, and a trained Eagle is worth two

camels. It is the *Bearcoote* of Atkinson in his Travels in Northern and Central Asia.*

27. Aquila Imperialis, Bechst.

Falco, apud Bechstein—Gould, Birds of Europe, pl. 5—Blyth, Cat. 100—Horsf., Cat. 58—Jerdon, 2nd Suppl., Cat. 9—Gray and Hardw., Ill. Ind. Zool., 2nd vol., pl. 28—A. mogilnik, Gmel.—A. heliaca, Sav.—A. bifasciata, Gray and Hardw., Ill. Ind. Zool. 1, pl. 17—Sykes, Cat 8—Jerdon, Cat. No. 10—A. Nipalensis, Hodgs., As. Res. XVIII., pl. 13—A. Chrysaetos, apud Jerdon, Cat. No. 9—*Jumiz*, or *Jumbiz*. Hind.—*Frus*, Beng.

The Imperial Eagle.

Descr.—The young bird has the plumage generally pale brown, paler beneath, and albescent towards the vent; two white bands on the wings, caused by the tips of the greater coverts and of the secondaries being white; tip of the tail white. (*A. bifasciata*).

In a more advanced state, the feathers are broadly edged with dark brown, leaving only the centre pale, as in Gray and Hardwicke's figure of *imperialis*.

The adult is a fine rich glossy dark brown; the head and hind neck an orange buff; the forehead dark, from the feathers being streaked with dark brown; quills black; tail dark hoary grey, barred and clouded with blackish, and with a broad black terminal band, tipped whitish; shoulders generally with some white spots, as also the scapulars; under tail coverts pale brownish white; some of the hindermost of the upper tail coverts are nearly white. Cere yellow, with a tinge of green; feet yellow. Irides in adults brownish yellow; dusky brown in the young bird.

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* Atkinson in his Travels on the Amoor describes and figures a scene which he asserts he witnessed himself. Some wolves had pulled down a deer, when two Golden Eagles came down on them from a vast height, attacked the wolves, killed two of them, and pulled their livers out. This is a sport I confess I would have liked to have been present at.

Length of a female 33 to 35 inches; extent $7\frac{1}{2}$ feet; wing 29 inches; tail 13; tarsus 4; mid toe and claw $3\frac{6}{10}$; bill at gape $2\frac{3}{4}$; height $1\frac{1}{8}$.

A male measured 30 inches; extent 6 feet; wing 24 inches; tail 12; tarsus $3\frac{1}{2}$; mid toe $3\frac{1}{4}$.

The bill is proportionally longer and weaker than in *Chrysaetos*, the tarsus is feebler, and the toes and claws much smaller; the wings reach to the end of the tail, or almost surpass it; the nostrils are oval and somewhat oblique.

The Imperial Eagle is rare in the South of India, but not uncommon in the Table land, and in Central India, and is also found throughout the Himalayas. It prefers the neighbourhood of hills, and the bare open country, or thin and low jungle. It may frequently be seen seated on the ground, or on a stone on the top of a low hill, till an hour or two after sunrise, when it rises, apparently unwillingly, and takes a quest after game at no great elevation, hunting slowly over the bushy valleys and ravines, and occasionally over cultivated ground. If unsuccessful in its search, it re-seats itself, and after an interval again takes wing, and this time soars to a great height, circling slowly in the air, and traversing a large extent of country. It pounces on hares, florikins, rats, lizards, and various other mammals and birds, and in default of these, will eat carrion. I have several times seen one captured in a net by a portion of the carcase of a sheep being put down as bait. When it does condescend to partake of carrion, it allows no other bird to approach till it has satisfied its hunger.

I have seen this Eagle's nest in a lofty tree in the Deccan. The egg is reddish white, with some red blotches and spots. One is figured in the first volume of the 'Ibis.'

I kept one alive at Jalna for some time. It was very tame, and appeared to prefer raw meat to any other kind of food, even to birds or animals, living or dead. It was very sluggish and inactive, even when urged by hunger; the only cry I heard it utter was a harsh croak. It used to drink a gulp or two of water after eating. Out of India, it is found in the South of Europe, North Africa, and Western and Northern Asia.

28. Aquila nævia, Gmel.

Falco, apud Gmelin—Blyth., Cat. 112—Horsf., Cat. 55—Gould's Birds of Europe, pl. 8—A. melanaetus, Sav.—A. clanga, Pall.—A. vittata, Hodgs.—*Kaljanga*, H.—*Bukayari Jiyadha*, Beng.—*Nella gedha*, Tel., *i. e.* Black Kite.

The Spotted Eagle.

Descr.—Adult, richly empurpled brown on the scapulars, interscapulars, and lesser wing coverts; the lanceolate feathers of the head and neck somewhat lighter brown, streaked paler, and the under parts generally lighter brown than the upper plumage; some larger and purer white spots on the greater wing coverts, and two white bars tipping the secondaries and greater coverts, as in *A. imperialis;* the tibial plumes similarly spotted: the under tail coverts, and generally the short tarsal plumes, are white, and the abdomen is more or less streaked with fulvous. Young birds are pale brown throughout, lighter beneath; and in the intermediate plumage the feathers are dark, centred with pale brown; some have the plumage dark dull brown, with dingy white markings.

Length of male 25 inches; wing 20; tail 10. A female was 28 inches; wing 22; tail 11; tarsus $3\frac{5}{8}$; mid toe barely 3; bill at gape $2\frac{1}{4}$; height $\frac{7}{8}$; cere, orbits, and feet dark yellow; irides deep brown: the wings reach to the end of the tail; nostrils very round.

The Spotted Eagle is found throughout India in suitable places. It prefers the neighbourhood of cultivation, especially of wet paddy fields, or the vicinity of tanks and marshes in a well-wooded country. It is tolerably common in the Carnatic, and Malabar Coast; rare in the table land. It preys upon all sorts of birds or small animals that it can manage to pick up, squirrels, rats; also lizards and frogs. It has a wild clanging cry, compared by Pallas to the sound 'jeb, jeb, jeb,' which it frequently utters when perched on a high tree. It breeds on trees. I have seen their nests, but did not procure the eggs. Blyth says it is common in the Bengal Sunderbunds. It is also found in the south of Europe, N. Africa, and Western Asia, and has been killed in England.

29. Aquila fulvescens, Gray.

Hardw., Ill. Ind. Zool. 2, pl. 29—A. punctata, Gray, Hardw. Ill. Ind. Zool. 1, pl. 16—A. fusca, ditto ditto 2, pl. 27—A. vindiana, Franklin, P. Z. S. 1831—Jerdon, Cat. No. 11—A. nævioides, apud Blyth, Cat. 111—and Horsf., Cat. 54—*Wokhab*, H.*—*Dholwa* of the Wagrees—*Bursawul* of the Yerklees—*Alawa* or *Salwa*, Tel.—*Ali*, Tam.

The Tawny Eagle.

Descr.—Young bird, light fulvous, brightest on the head and throat, changing to pale dingy brown on the back and scapulars, and to whitish yellow beneath, with dark shafts; shoulders and lesser coverts pale whity brown; quills black; tail dusky, with faint dark bars.

At a later stage the colour of the bird is uniform fulvous brown throughout (*A. fusca*). In an intermediate state, the abdomen is marked with fulvous streaks, and there are many specks and streaks of the same on the head and the back of the neck. The adult bird is tawny brown, with the head and throat dusky, or almost black; the feathers of the crown, and the neck hackles, tipped with pale brown; the wings, breast, and lower parts deep fuscous brown; the breast slightly speckled, and the belly and wings spotted more or less with light tawny brown; two light wing bars, and the tip of the tail also light. Irides hazel brown; cere deep yellow; feet yellow.

Length of a male 25 inches; wing 19; tail 10. A female measures 28 to 29 inches; wing 20 to 21; extent 5 to $5\frac{1}{2}$ feet; tail 11; tars. 3; mid toe and claw 3; bill at gape $2\frac{1}{2}$; height 1; weight 4lbs. The wings reach nearly to the end of the tail; the toes are stronger than in *A. nævia*, and the bill is also stronger and deeper.

This Eagle was for some time considered identical with *A. nævioides*, Cuvier, from Africa; but that is a much larger and more robust bird than our Indian species. The *Wokhab* is more robust in form than *A. nævia*, and is quite a miniature of *A. imperialis*. It is

* The name *Wokhab* is evidently derived from the Arabic, *Ogab*, which is the name given in Northern Africa to *A. nævioides*.

found throughout the greater part of India, except the more moist and wooded portions. It is unknown on the Malabar Coast, and in Lower Bengal, and does not extend into the Indo-Chinese countries. It prefers the dry open plains, and cultivated land, especially if there are hills near. It is rather rare in the Carnatic, but very abundant in the Deccan, in Central India, and the upper plains of India above Monghyr. Till an hour or two after sunrise it may be seen seated on the top of some tree, and in the very centre, and nearly concealed from view; after which it sallies forth, sailing about at a moderate height over the fields, valleys, and ravines, or circling high in the air with kites, vultures, and other birds of prey. It frequently enters cantonments and villages, and carries off chickens, ducklings, or other poultry. It feeds occasionally on hares, partridges, and other game; also on rats, lizards, snakes, and even insects; and will always descend to the fresh carcase of a sheep. It, however, subsists habitually by robbing kites, falcons, and other birds of prey of their earnings; and may often be seen pursuing a kite with great impetuosity, and always succeeds in getting the desired morsel.

The *Wokhab* is very troublesome in hawking on this account, mistaking the jesses for some prey, and pursuing the Falcon, sometimes driving it back to the fist of the falconer, at other times frightening it fairly and irretrievably away. For an interesting account of this Eagle pursuing a Falcon, *vide*, J. A. S., XV. 8. I once saw a pair of *Wokhabs* kill a florikin (*Otis aurita*) which I had put up, and at which I had slipped a *Laggar*. One of them made a swoop, and missed, the other instantly followed, and struck it to the ground; but riding up quickly, I prevented it from carrying the bird off, and secured it quite dead, with its back laid bare by the powerful hind claw of the Eagle. I have often had *Wokhabs* alive. One in particular got very tame. It used to snatch morsels from the Imperial Eagle kept along with it, to which the latter in general quietly submitted. It was a very noisy bird, frequently uttering shrill and wild screams. It had, moreover, a great share of curiosity, walking up to and carefully and thoroughly examining every new comer I placed in the same apartment.

The *Wokhab* builds on high trees, making a large nest of sticks, and laying two eggs, white, with a few reddish brown spots, from January to March.

30. Aquila hastata, Less.

Morphnus, apud Lesson—Blyth, Cat. 113—Spizaetus, apud Horsf., Cat. 40—Spiz. punctatus, Jerdon, Suppl. Cat. 20, bis—Limnaetus unicolor, Blyth, J. A. S, XII. 128—*Jiyadha* and *Gutimar*, H. in Bengal, the last word meaning Cocoon-destroyer. —*Phari Tisa*, H., of some Falconers.

The Long-Legged Eagle.

Descr.—Adult, plumage above glossy hair brown, most of the feathers tipped with white; upper tail coverts barred with white; quills glossy purplish black; tail the same, obsoletely barred with dusky grey, and with a white tip; throat and breast unspotted brown; breast, abdomen, feathers of the leg, lower wing coverts, and under tail coverts, pale fawn or yellowish white, closely barred with brown; quills, and tail beneath, grey, mottled and barred with dusky. In some only the feathers of the hind head and back of the neck are tipped white, three distinct rows of spots on the wings, and the tertiaries broadly tipped with white; in others the spots are still less developed.

Young birds are much lighter brown; the tertiaries and secondaries barred and clouded with whitish and brown; the tail more distinctly barred, and the lower parts, from the breast, streaked longitudinally with fulvous white.

The cervical feathers are lanceolate, and the neck hackles are small. The bill is comparatively small; the tarsi somewhat long and slender; the wings reach to or surpass the end of the tail; cere and feet yellow; irides brown.

Length of a female 26½ inches; wing 19; tail 9½; tarsus 4; middle toe and claw, 3. A male measured 25 inches; wing 18¼; tail 9; bill at gape 2¼; height not ⅞.

This small but handsome Eagle is comparatively rare. I only met with it in the South of India once or twice. It appears to be more common in Bengal, where it plunders birds' nests, and also

eats the cocoons of silk-worms. A specimen, shot by Mr. Frith in Mymensing, first attracted that gentlemen's attention by the alarm which was manifested upon its approach to a large banyan tree, upon which were several of the deep and massive nests of the *Sturnus contra*, one of which it immediately proceeded to pull to pieces, to rob of its contents, in which operation it was shot. (J. A, S., XII. 128.)

Horsfield places this bird as a *Spizaetus*, along with *S. cristatellus*, but its whole structure and plumage are more truly aquiline, although aberrantly so, and it perhaps might form the type of a distinct sub-genus.

The next species of Eagle has been separated as a sub-genus, HIERAETUS, Kaup. It is barely separable from Aquila, and I shall merely give the characters of the group without adopting the name.

Bill small, slightly curving from the base; commissure perfectly straight; wings not reaching to the end of tail; tarsus short, stout; toes short; inner claw very large. These are birds of small size with a tendency to an occipital crest. The inner edge of the centre claw is somewhat dilated as in *Pernis*.

31. Aquila pennata, GMEL.

Falco, apud GMELIN—BLYTH, Cat. 115—HORSF., Cat. 53—GOULD'S Birds of Europe, pl. 9—A. minuta, BREHM—Spizaetus milvoides, JERDON, Cat. 20, and Suppl. 20—Butaquila strophiata, HODGS.—*Bagati Jumiz*, H. of some, *i. e.*, Garden Eagle; also *Gilheri mar*, *i. e.*, Squirrel-killer—*Oodatal gedda*, Tel., *i. e.*, Squirrel Kite—*Punja prandu*, Tam., *i. e.*, Field Kite.

THE DWARF EAGLE.

Descr.—Head and neck pale orange brown, the feathers lanceolate, and streaked in the centre with dark brown; some of the feathers lengthened, entirely brown, forming a rudimentary crest; a narrow superciliary stripe, and a band from the angle of the mouth below the ears, and a central stripe on the chin, dark brown; the rest of the upper plumage sepia brown; the middle wing coverts, and some of the scapulars, broadly edged with whitish brown, forming a conspicuous light band on the wings; tail dark brown, with a pale tip, the inner webs of the feathers barred

indistinctly; plumage beneath reddish brown, palest on the feathers of the tarsi, and the feathers streaked with dark brown.

The young bird is white beneath, head and neck also with white edges to the feathers and the brown of the upper parts lighter, and the white markings on the wing more distinct; the upper tail coverts also are whitish, and the tail distinctly barred on both webs. There is very generally a white shoulder spot at all ages, and the forehead is white in some; cere and base of bill yellow; feet yellow; irides orange brown.

Length, male, 21 to 22 inches; wing $16\frac{1}{2}$; tail 8; female, 23; wing 17; tail 9; tarsus $2\frac{1}{2}$; mid toe and claw $3\frac{1}{4}$; bill at gape $1\frac{3}{8}$; height not $\frac{3}{4}$.—wings reach nearly to the end of the tail.

This dwarf Eagle is found throughout India, frequenting groves of trees, gardens, and cultivated land. It occasionally pounces from its perch on the top of a tree; but generally circles in the air, and stoops on squirrels, rats, doves, pigeons, chickens, &c. It generally seizes its prey on the ground, now and then on the wing. Layard mentions having seen one in Ceylon pounce on a Bulbul in a bush. It often hunts along with kites in cantonments and villages, and the blame of carrying off chickens, pigeons, &c., is unjustly attributed to them occasionally, for, I believe, it is generally this Eagle that is in fault. The crows readily distinguish it, and often pursue it clamorously. It breeds in this country.

Out of India this Eagle is found in Western Asia, North Africa, and the South of Europe.

A very nearly allied species is the *Aquila morphnoides*, Gould, from Australia. Another Eagle from the same country is the wedge-tailed Eagle, *A. audax*, which has a very wedged tail, and has been separated by Kaup under the name of *Uroaetus*.

We now come to the 2nd group, or *Kite Eagles*, to which we are perhaps led by the *Aquila hastata*.

Gen. NEOPUS, Hodgson.

Syn. *Heteropus*, Hodgs.; *Onychaetus*, Kaup.; *Ictinaetus*, Jerdon.

Char.—Bill rather small, slight, bending from the base, much hooked at tip, with a slight festoon in the upper mandible; cere rather large; nostrils ovoid, oblique; wings very long, equal to

or exceeding the long tail; 4th and 5th quills equal and longest; 1st quill short, 2nd nearly equal to the 3rd; the larger quills strongly emarginate; tail long, slightly rounded; tarsus feathered, somewhat feeble, of moderate length; toes short, unequal, the outer toe very short, and the claw small; inner toe very large, nearly as long as the central one, and stouter, and the claw much larger, longer than the hind claw; all the claws moderately curved.

The head is round and kite-like, the wings and tail both ample, the orbits downy, and the form slender. This remarkable type contains but one known species. The peculiar structure of the foot of this Eagle, almost unique, I believe, among the diurnal Raptores, though common among Owls, was first pointed out by myself, and I subsequently named the type *Ictinaetus*. Hodgson, however, had previously named it *Heteropus*, which word being already pre-occupied, he changed, in 1844, into *Neopus*; and Kaup, the same year, proposed *Onychaetus*.

32. Neopus Malaiensis, Reinwardt.

Falco, apud Reinwardt—Tem., Pl. col. pl. 117—Blyth, Cat. 114—Jerdon, 2nd Suppl. Cat. 12. ter.—Aquila perniger, Hodgs., J. A. S. V. 227—Heteropus, and afterwards Neopus, Hodgs.—Horsf., Cat. 617—Nisaetus ovivorus, Jerdon, Suppl. Cat. 12 ter.—*Lakmong bong*, Lepch.—*Heugong* Bhot.—*Adavi nalla gedda*, Tel. i. e., jungle black Kite.

The Black Eagle.

Descr.—Of an uniform brown black, paler and duller beneath; upper tail coverts barred with white; tail with some light bars; quills faintly barred with grey on their inner webs.

Cere, gape, and feet deep yellow; bill greenish horny, black at the tip; irides dark brown.

Length of a male $27\frac{1}{2}$ inches; wing 22; tail 14. A female was $30\frac{1}{2}$ inches; wing 23; tail 14; tarsus 4; centre toe $1\frac{6}{10}$, claw $1\frac{2}{10}$; inner toe $1\frac{4}{10}$, claw $1\frac{9}{10}$; outer toe $\frac{9}{10}$, claw $\frac{0}{10}$; hind toe $1\frac{9}{10}$, claw $1\frac{7}{10}$. Weight $3\frac{1}{2}$ to 4lbs.

This remarkable eagle is found in most of the hilly and jungly districts of India. I have seen it in Malabar near the level of the

sea, in the Wynaad, Coorg, and all along the Western Ghâts, on the Neilgherries, on the Eastern Ghâts, and, rarely in Central India; also throughout the Himalayas. Out of India it is found in the hilly districts of Burmah and Malayana.

It is a bird of easy, graceful, and elegant flight, always seen soaring and circling about at no great height, with hardly any flapping of its ample wings. I never saw it perch except for the purpose of feeding, or on being wounded; and the Lepchas of Darjeeling, when I saw this Eagle, said 'this bird never sits down.' It lives almost exclusively, I believe, by robbing birds' nests, devouring both the eggs and the young ones. I dare say if it saw a young or sickly bird it might seize it, but it has neither the ability nor dash to enable it to seize a strong pheasant on the wing, or even, I believe, a partridge; and Hodgson, I fancy, must have trusted to a native, partially ignorant of its habits, when he says—"that it preys on the pheasants of the regions it frequents as well as their eggs." I have examined several kinds shot by myself, and invariably found that eggs and nestling birds alone had been its food. In three cases I found the eggs of the hill quail (*Coturnix erythrorhyncha*), of *Malacocercus Malabaricus*, and of some doves (*Turtur*), with nestlings, and the remains of some eggs which I did not know. I have seen it also after circling several times over a small tree, alight on it, and carry off the contents of a dove's nest. In India, doves, and perhaps some other birds, breed at all times in the year; and it may perhaps obtain eggs or nestlings at all seasons, by shifting its quarters and varying the elevations: if not, it probably may eat reptiles, but of this I cannot speak from observation. It hunts over the forests slowly, regularly quartering the ground, and examining every spot. The natives say that it breeds on trees, which is indeed most likely. Hodgson remarks that its body is entirely free from offensive odour and vermin. Capt. Irby, in his paper on the 'Birds observed in Oude and Kumaon,' states that he obtained this bird in Kumaon and saw it up to 10,000 feet of elevation. He states the irides to be yellow, but in this he is certainly in error. Doctor Adams, in his list of the birds of Cashmere, P. Z. S. 1859, says that he saw on the mountains, "at an elevation of about 17,000 feet a fine Eagle about the size of the golden Eagle; the

head and neck were white, rest of plumage black, tail long and wedge-shaped. I was struck subsequently with its similarity to *A. malaiensis*." This Eagle never being white on the head, Adams' bird must have been some other species; perhaps the *Aquila pelagica* of Pallas.

3rd.—Hawk Eagles.

This group comprises some very fine Eagles which, from their short wings and some other points, have been placed by certain systematists among the *Accipitrinæ*. Their large size, powerful legs and feet, and more particularly perhaps their changes of plumage, ally them more in my opinion to the Eagles.

Gen. NISAETUS, Hodgs.

Syn. *Tolmaetus* and *Eutolmætus*, Blyth.

Char.—Bill moderately long, strong, deep, much hooked at the tip, moderately compassed; cere large, nostrils large, elliptic; upper mandible strongly festooned; wings moderate, 5th quill longest, tail long, nearly even; tarsi long, strong, but not thick, feathered to the toes; toes large, unequal, claws very large, sharp and well curved; the inner toe and claw, and hind toe and claw especially, very large.

This genus was, as originally instituted by Hodgson, intended to include both this present species, and the birds of the next group, which are now classed under the prior name of *Limnaetus*; Blyth subsequently named the present type *Eutolmaetus*, but I think Hodgson's previous name ought to stand for it, as this bird was one of those included in his genus. Blyth classes it among the true Eagles, and Horsfield even does not separate it from *Aquila*, but its general form, the structure of its powerful feet, its yellow irides, its mode of coloration, and its habits, convince me that its true place is with the Hawk-eagles.*

33. **Nisaetus Bonelli**, TEMM.

Falco, apud TEMMINCK, Pl. col. 288—Aquila apud HORSF., Cat, 56—Eutolmaetus, BLYTH, Cat. 108—Nis-grandis, HODGSON, J.

* *A. bellicosa* of Africa appears to belong to this genus.

A. S., V. 230—JERDON., Ill. Ind. Orn. pl. I. (the young)—N. niveus, apud JERDON, Cat. 12—Aq. intermedia, BONELLI—*Mhorangah*, or *Mhorangi*, Hind., *i. e.* Peacock-killer—*Kundeli salawa*, Tel., *i. e.* Hare-eagle—*Rajali*, Tam. *i. e.* Royal eagle.

THE CRESTLESS HAWK-EAGLE.

Descr.—Adult, above dark hair brown, with usually some white about the head and back of neck; quills dusky black; tail slaty greyish, with about seven narrow dark bars, and a broad sub-terminal one; beneath white, with dark brown mesial streaks on the feathers of the lower part of the abdomen; thigh coverts, tarsal feathers, and vent, nearly brown, the feathers centred darker, and the thigh coverts, tarsal feathers, and under tail coverts, more or less banded with white, or with rufous in some. In some old birds the entire ground colour of the lower parts is rufous brown.

The young bird is pale brown above, pale rufous or ferruginous beneath, in some nearly white, as in the specimen figured in my Illustrations. Tail pale greyish brown, with dark bars. With each successive moult the white or ferruginous becomes purer white, and the dark central stripe to each feather increases in size, more especially on the lower part of the abdomen.

Irides bright yellow, pale brown in the young bird; feet pale greenish yellow; cere greenish yellow; bill greenish horny, black at the tip.

Length of male 27 inches; ext. 5 feet; wing 18; tail 11; weight about 5℔. A female was 29 inches; wing $20\frac{1}{2}$; tail $12\frac{1}{4}$; tarsus $4\frac{1}{2}$; mid toe and claw 4; hind toe and claw $2\frac{3}{8}$; bill at gape 2; height $\frac{7}{8}$. The wings reach nearly to the end of the tail.

This magnificent Eagle is found throughout all India, from the Himalayas to the extreme South, but only in hilly or jungly districts in general, though it is occasionally seen in cultivated country and near tanks, if not very distant from some hilly region. I have observed it chiefly on the Neilgherries, on the crest of the Western Ghâts, in Central India, and occasionally in the Carnatic and Deccan. The individual from which the drawing in my Illustrations was taken was killed in Guindy Park at Madras.

It is much on the wing, sailing at a great height, and making its

appearance at certain spots in the district it frequents, always about the same hour. It may often be seen seated on the summit of a lofty tree, or on some over-hanging rock.

It preys by preference on various kinds of game, hares, jungle fowl, spur-fowl, and partridges, and even on pea-fowl; also on ducks, herons, and other water-fowl, and, according to the testimony of Shikarees, it has been known to strike down the *douk (Tantalus leucocephalus)*. Most Native falconers, too, have stories to relate of its having carried off a favorite hawk. On one occasion, on the Neilgherries, I observed one stoop successively at a spur-fowl, a hare, and a pea-fowl, each time unsuccessfully, however, owing to the thickness of the jungle. A pair were also wont to resort regularly to a village on the hills and carry off fowls. Mr. Elliot, too, mentions "that he once saw a pair of them nearly surprise a peacock, pouncing on him on the ground." Great havoc was committed among several pigeon-houses on the Neilgherries in 1840-1841, by a pair of these Eagles, and I heard that one or two were completely devastated by them. The manner in which they captured the pigeons was described to me by two or three eye-witnesses to be as follows:—On the pigeons taking flight, one of the Eagles pounced down from a vast height on the flock, but directing its swoop rather under the pigeons, than directly at them. Its mate, watching the moment when, alarmed by the first swoop, the pigeons rose in confusion, pounced unerringly on one of them, and carried it off, and the other Eagle having risen again, also makes another, and, this time, a fatal stoop. One of these Eagles, shot in the act, was presented to me by a gentleman, who had been a great sufferer by them.

The *Mhorungi* breeds on high rocky cliffs. I am acquainted with the site of one eyrie on the eastern slope of the Neilgherries; but at the time I paid it a visit the young birds had flown. It was on a broad ledge of rock, not more than 20 feet from the top of the cliff, and could have easily been visited with the aid of a rope. I have very little doubt that this Eagle could be trained to kill hares, antelopes, fawns, and probably bustards also, and if so would afford magnificent sport.

Gen. LIMNAETUS, Vigors.

Syn.—*Spizaetus* in part, Auct.—*Nisaetus*, HODGSON (in part)—*Lophaetus*, Kaup.

Char.—Bill short, high at the base, curved, hooked at the tip, with a prominent festoon in the upper mandible; wing short; tail long, square; tarsi long, moderately strong, feathered to the base; toes unequal, large; claws large, strong and much curved; head usually crested.

This genus differs from the last in the shorter and more Hawk-like bill, in the shorter wings, and in the head being usually crested. It is placed by Bonaparte and Horsfield among the *Accipitrinæ*. Gray, in his last published list of genera, refers the species to *Limnaetus*, retaining *Spizaetus* for the American birds.

There are several Indian and Malayan species, whose claims to specific distinction, and synonymy, are not yet accurately defined. I give four Indian species.

34. **Limnaetus niveus**, TEMM.

Falco, apud TEMMINCK,—Pl. col. 127—F. limnaetus, VIG.—HORSF., Cat. 39—BLYTH, Cat. 105 (in part)—Nisaetus pallidus, HODGS.—*Sadal*, H. in Bengal.

THE CHANGEABLE HAWK-EAGLE.

Descr.—Young, above light wood brown, the feathers of the head and nape fulvous white, with dark brown streaks; wing coverts more or less marked with white, especially the greater coverts; beneath white, slightly tinged with fulvous in some, and with a few brown spots on the breast and flanks in some birds; tail dusky grey brown, with six or seven cross bars of dark brown; wings, beneath, and tail, whitish.

In an older state the head and hind neck are pale brown, with dark centres, the brown of the upper plumage darker, with fewer white markings on the lesser wing coverts; the cheeks, chin, and throat, unspotted white; the rest of the body beneath marked with a few narrow lines of dark brown; the thighs transversely barred

with pale fawn; tarsal feathers, and under tail coverts, unspotted; the lining of the wing white, with brown spots. A further stage is marked by the spots beneath becoming much larger; the thigh coverts and tarsal feathers also marked with pale brown transverse bands; and the bands on the tail fewer and narrower, except the terminal one; the chin, too, has a central dark brown line in some, and the feather below the ears from the gape are streaked with dark brown.

In the nearly adult bird the dark markings below are still more developed, and brownish black, and the upper surface also is darker; and in some the whole plumage is uniform dusky black with an ashy tinge. Now and then one is met with, having a rudimental crest, in some nearly three inches long.

Length of male 25 inches; wing 16; tail $9\frac{1}{2}$ to 10; tarsus $3\frac{1}{2}$; mid-toe and claw 3. Irides bright yellow, brownish in the young; cere yellowish; feet pale yellow.

This small crested Eagle is not rare about Calcutta and other parts of Lower Bengal, extending to the Himalayas; but I have never obtained it in the South of India, nor is it to my knowledge found in Central India or the Upper Provinces. It extends, however, into the Burmese and Malay countries, and to the Islands. I observed it rather common in the jungles at the mouth of the Rangoon river. Nothing remarkable is recorded of the habits of this species.

35. Limnaetus Cristatellus, Tem.

Falco, apud Temminck, Pl. col. 282—Blyth, Cat. 105 (in part)—Horsf., Cat. 39, var. A.—Elliot, apud Jerdon, Cat. $12\frac{1}{2}$—F. Lathami, Tickell?—F. cirrhatus, Gmel?—*Shah Baz*, H.—*Jutu bhyri*, Tel.

The Crested Hawk-Eagle.

Descr.—Young, pale brown above, head and neck fulvous, long occipital crest black, with white tip; feathers of the head and neck white edged; beneath white, with some small light fulvous or brown spots on the breast and lower parts. There is less white on the wing coverts than in the young of the last, and the bars on the tail are wider.

The adult bird has the occipital crest sometimes five inches long, and of as many as twelve feathers of different lengths, deep black, tipped with white; the head and neck fulvescent brown, with mesial dark streaks; upper plumage glossy hair brown; the scapulars, interscapulars, and tertiaries, more or less black; the wing feathers banded more or less distinctly; tail light greyish brown, with three or four dark bands, the last one broader, and all wider than those in *L. niveus*; beneath, the foreneck and breast pure white, with a broad dark mesial streak to each feather, and three dark lines on the white throat, not so distinct, however, as in the last, from all the feathers being more or less streaked; belly, flanks, vent, and under tail coverts, dark brown; thighs the same, only a little freckled with whitish; tarsal feathers mottled white and fulvous brown.

Length of a male 24 to 25 inches; wing 16; tail 11; tarsus 4; mid toe and claw 3. A female measured 29 inches; wing 17½; tail 12½. Irides yellow, dun brown in the young bird; cere pale yellow; feet yellow.

Blyth and Horsfield join this species to the last, but in this I cannot agree. This is generally a larger bird, and the crest is always present, and although in words the difference of the colors of the two birds is not well marked, yet I think I could tell the one species from the other at all ages. The larger crested Eagle never, as far as we know (and I have had many specimens before me from different parts of the Peninsula), assumes the uniform blackish color which the smaller race does. The crested one is not found in the localities which the smaller one frequents, and *vice versâ* The most prominent differences are, the long crest in this, *never* absent, the head being darker from the first plumage, instead of whitish, and continuing so at corresponding ages; in the thigh feathers being darker, and the tail bands wider. The bill, too, appears to me to be more powerful and deeper; the toes, however, appear about the same size, though the tarsus is somewhat longer in the crested species, in specimens of nearly equal dimensions.

Blyth at one time considered the two races to be distinct, and remarked that the dorsal feathers of this species were longer and narrower than those of *S. limnaetus*, which are broad and rounded.

The crested Eagle is found throughout Central and Southern India. I have got it in Malabar, on the Eastern Ghâts, and in central India, near Nagpore; and it has been killed in the Midnapore jungles. According to Horsfield, it has been procured also in the Himalayas, in Kumaon, and Bootan, but very probably mistaken for the last, or perhaps the next species. It is generally seen seated on the top of a high tree, where it watches for hares, partridges, young pea-fowl, jungle-fowl, &c., on which it pounces. It is said to breed on trees. It extends to Ceylon, where it has been known to kill fowls and ducks.

I think it is somewhat doubtful if Tickell's *F. Lathami* should be referred here, or to some other species; perhaps from its small size it may be the young bird of *Spizaetus Kienierii*. He describes it as 18 inches long, head, hind neck, and wing coverts, clouded ashy and rusty, back clouded with brown, beneath white, with a streak of black down the centre of the throat, and with rusty bars on the breast and belly. Can it have been *Astur trivirgatus*?

36. **Limnaetus Nipalensis**, Hodgson.

Nisaetus Nipalensis, crested variety, Hodgson, J. A. S., V., 229; VI., 361—Blyth, Cat. 104—Horsf., Cat. 616—N. Pulcher, Hodgs., J. A. S., XII. 305,—F. orientalis, Tem. and Schl.?—*Kanzha chil*, Lepch.—*Reiyore*, Bhot.

The Spotted Hawk-Eagle.

Descr.—Plumage of the upper parts deep brown, very dark on the inter-scapulars, and verging on black on the crown and occipital crest, which is slightly tipped white, and is four inches long; nuchal feathers edged tawny brown; chin blackish, continued as a median line to the breast, which is fulvous brown, and with dark streaks; or in some, the chin, throat and breast, fulvous, with large blackish brown ovate spots, and a dark moustacheal band, and two similar lateral streaks, at first very broad, proceed from the corners of the gape; belly, flanks, lower tail coverts, and thigh coverts, more or less distinctly banded with brown and white; tarsal feathers banded whitish; wings dark brown, banded with blackish;

under wing coverts banded with white; tail light greyish brown, with five dark bands, as broad or broader than the interspaces; upper tail coverts also banded brown and white.

Length of a male 29 inches; wing 18; tail 13; tarsus 4; mid-toe $3\frac{1}{4}$.

The feathers of the tarsus in this species cover the bases of the toes.

Another, probably a female, was 32 inches; wing 19; tail 14; tarsi $4\frac{1}{2}$; mid-toe and claw $3\frac{3}{4}$. Bill strong, 1 inch high.

This splendid Hawk-Eagle has been found on the Himalayas, in the Khasiya Hills, and in Ceylon. I got one specimen only at Darjeeling, where, however, it is well known, though rare, and is said to kill pheasants, partridges, and other birds.

37. **Limnaetus Kienierii,** De Sparre.

Astur, apud De Sparre, Guer. Mag. Zool., 1835—Ois. Pl. 35—Blyth, Cat. 107—Horsf., Cat. 41—Sp. albogularis, Tickell, J. A. S., XI., 456.

THE RUFOUS-BELLIED HAWK-EAGLE.

Descr.—General color of the upper parts black, with a shade of brown, the nuchal feathers white at the base; an occipital crest of $2\frac{1}{2}$ inches; ear feathers mixed white, black, and rufous; tail dusky brown above, with dark bands, the central feathers darkest; beneath, albescent, with narrow dusky bands, most conspicuous on the centre feathers, and also obscurely seen above; throat, fore neck and breast pure white, the sides of the last having narrow black central streaks; belly, flanks, under tail coverts, forepart of wings beneath, and legs, deep rufous, darkest on the tibial feathers, and streaked longitudinally with black on the sides, some of the posterior feathers being wholly dusky black; inner web of the primaries barred black beneath.

Bill leaden blue; cere wax yellow; toes yellow; irides dark. Length 22 inches; wing 16; tail 10; tarsus 3.

This beautiful Hawk-Eagle has been found in Central India, and in the Himalayas, but appears very rare. A specimen from Darjeeling is in the E. I. Co.'s Museum, and one from Chyebassa in the

Museum of the Asiatic Society at Calcutta. The original specimen described by De Sparre came from the Himalayas.

Other species of this genus are *L. caligatus*, Horsf., of which Blyth's *Spiz. alboniger* is a younger state. This is a very beautiful, small, but typical species, approaching *Sp. Kienerii.* A dark race from Malacca, of an uniform dusky black color, exists in the Museum of the Asiatic Society, resembling the dark state of *limnœtus*, but with a stronger bill.

Major Pearse informs me that one of these crested Eagles is very rarely procured from the N. W. Himalayas, and trained for hunting, and is known as the *Shah-baz*, as indeed *L. cristatellus* was called by Meer shikars in the South. He had one himself, which died just as its education was finished.

Various crested Eagles are found both in Africa and South America, but they belong to slightly different types. A crested Eagle from Africa, in the Museum of the Asiatic Society, has the bill straighter, longer, and more feeble, the lateral toes nearly equal, and the feet altogether much weaker, and certainly belongs to a different genus, *Lophaetus*, Kaup. The American Crested Eagles are placed by Gray in two genera, *Spizaetus*, and *Pternura*, Kaup. The genus *Morphnus*, often placed among these Hawk-Eagles, has the toes very feeble; and I do not think that it enters this division.

The remaining Eagles differ from the foregoing ones in not having the tarsus feathered. There are two very distinct forms, the Serpent Eagles, and the Sea Eagles.

4th.—Serpent Eagles.

Gen. CIRCAETUS, Vieillot.

Char.—Bill rather short, gently curving from the base, much hooked at the tip, culmen rounded, compressed at the sides, commissure nearly straight; nostrils oval, oblique; wings long, the 3rd longest, or 2nd and 3rd sub-equal, 4th nearly as long; the first three quills emarginate; tail long, nearly even; tarsi long, plumed below the heel, clad with small hexagonal scales; feet small, toes

short, scutellate at the base of the claws, the lateral toes about equal; claws tolerably curved, rather short, of nearly equal length.

The birds of this genus are chiefly African. They frequent the open plains, are much on the wing, and live mostly on reptiles. They make the nearest approach among the Eagles, both in structure and habits, to the Buzzards.

38. **Circaetus Gallicus**, Gmel.

Falco apud, Gmelin.—Gould, Birds of Europe, pl. 13—Blyth, Cat. 85—Horsf., Cat. 63—C. brachydactylus, Meyer—Sykes. Cat. 6—Jerdon, Cat. 13—*Sampmar*, H.—*Sapmaril*,—Beng. *Malpatar*, Can.—*Pamula gedda*, Tel.—*Pambu prandu*, Tam.—*Rawal* of the Wagrees—*Kondatele*, of the Yerklees.

The Common Serpent Eagle.

Descr.—Young, head and nape whitish, the feathers brown streaked; back and wings pale earthy brown, lightest on the wing coverts; quills dusky black; tail pale ashy brown, with darker bands, and the inner webs almost white; beneath, chin to breast fulvous, with narrow longitudinal brown streaks; from the breast to the vent, white, with a pale brown streak on the centre of each feather.

The adult is darker brown above and on the head; and the lower parts white, the feathers all marked with broad stripes, or spots, tending to form a denser zone on the throat and breast.

Irides deep yellow; legs dirty pale yellow.

Length of a male 26 or 27 inches; wing 20; tail $10\frac{1}{2}$: weight 2lbs. 11 oz. A female is about 30 inches; wing 23; tail 12; tarsus 4; mid-toe 3; bill at gape $2\frac{3}{8}$; weight $3\frac{1}{2}$lbs.

The head is large, full and puffy; the feathers of the head, and neck rounded, not lanceolate; the wings reach to the end of the tail.

This Serpent Eagle is spread over all India, but not found, in general, in forest, or thick jungle. It prefers the open plains, and cultivated ground, either wet or dry. It may often be seen seated on a low tree, or sometimes even a bowrie pole, whence it occasionally darts on its quarry; but it generally circles in the air, taking a long and lofty flight, now and then flying heavily

along the ground like a harrier. I have frequently seen it hover in the air, like a kestril, and drop down on its prey, like a stone, afterwards. It is a rather noisy bird, frequently uttering a wild, plaintive scream. I have seen several together occasionally, but it is usually solitary. Its chief food is snakes and lizards, but it will eat anything, rats, weakly birds, crabs, frogs, centipedes, and large insects. I have seen one strike at a wounded hare, and it will occasionally carry off a wounded teal or duck. Mr. Elliot, as quoted in my Catalogue, says:—"Pounces on snakes and guanas, (*Monitor*). My Meer shikaree has seen them on the ground with their claws on the snake's head, its body coiled round the bird's wings, in which state the herd-boys sometimes kill them. The Yerklees say it has a figure of the God's chuckram under each wing, by which it prevents the snake going forward." It builds in high trees, making a moderately large nest of sticks, and lays two eggs, very round, dirty white, with a few indistinct light brown blotches at the large end. This Eagle is found in the South of Europe, in Africa, and over a great part of Asia.

At least three other species of *Circaetus* are recorded, all from Africa.

Gen. SPILORNIS, Gray.

Syn. *Hæmatornis*, Vigors—*Ophaetus*, Jerdon.

Char.—Bill straightish at the base; wings short; head crested; otherwise as in *Circaetus*.

The birds of this genus differ from those of *Circaetus* in being more arboreal, and much less on the wing, darting on their reptile prey from the bough of a tree. They are confined to the tropical parts of Asia.

39. **Spilornis cheela**, DAUD.

Falco, apud DAUDIN—BLYTH, Cat. 86—HORSF., Cat. 62—H. undulatus, VIGORS, P. Z. S., 1831.—GOULD, Cent. Him. Birds, pl. 1—Circaetus undulatus, apud, JERDON, Cat. 14—C. Nipalensis, HODGSON, A. R. XVIII., Pt. 2, p. 20, pl. 2—Buteo bacha apud FRANKLIN, and SYKES, Cat. No. 9—F. albidus, CUVIER, TEMM, Pl. col. 19—(the young bird)—Buteo melanotis, JERDON, Suppl.,

Cat. 21 ter. (the young)—*Tilai baj*, Beng., *i. e.*, Spotted Hawk; also *Sab-cheer*, *i. e.* the full crested ditto—*Furj baj*, at Saharunpore—*Nalla pamula gedda*, Tel., *i. e.* the Dark Serpent Kite—*Botta genda* of the Gonds—*Goom*, Can.—*Murayala*, Mahr.

The Crested Serpent Eagle.

Descr.—Adult, head black, the feathers white on their basal portion, and for nearly two-thirds their length, showing a conspicuous full black and white crest; above hair brown, shoulders and lesser wing coverts with small white spots, the quills with broad dusky bands; tail brown, mottled and clouded with white, and with two broad blackish bands; beneath, chin to breast unspotted brown; thence to undertail coverts, pale brown, with whitish faint bars, and white ocelli; cere and orbits deep yellow; irides bright yellow; legs dirty yellow.

The young has the upper plumage brown, edged with pale rufous, the crest feathers having more white than the adult; the tail hoary brown, with three broad bars; quills brown, with darker bands, and the quills and medial wing coverts tipped white; beneath pale whity buff; the feathers of the breast darkest, and centred with brown; ear coverts, and stripe beneath the eyes, deep black—One young specimen before me differs in having the whole of the color of the head and lower parts replaced by tawny buff or ferruginous.

Length of male 25 to 26 inches; of a female 30 to 32. Of one of the latter dimensions the wing was 21; ext. 62; tail 14; tarsus $4\frac{1}{4}$; mid-toe and claw $2\frac{3}{4}$; bill at gape $2\frac{1}{8}$. The wings do not reach to the end of the tail by about 3 inches.

A very fine specimen from Darjeeling has the whole of the feathers of the upper plumage edged with whitish and rufous; the lower parts pale tawny brown, the feathers of the throat and breast with brown marks, the chin white, with black streaks, and the ear feathers pure black; lower abdomen, flanks and thigh coverts, banded with white, dark edged, ocelli; under tail coverts banded brown and white. Length 30 inches; wing 21; tail 12.

The Crested Serpent Eagle is found over all India, most numerous in jungly countries, but also by no means rare in well-wooded and

irrigated districts. It extends into Assam and Burmah. It usually watches for its prey from a high tree, or sails slowly over the fields and woods. It lives chiefly on snakes, also on lizards, rats, large insects, and frogs. According to Mr. Blyth, it clutches these last out of the mud of shallow tanks, and its toes are very often covered with mud. It has a plaintive wild cry. It breeds on trees, making its nest of sticks; and lays two dirty white eggs, with a few dark specks.

Other species of Crested Serpent Eagles are S. *Bacha* of Daudin, (*F. bido*, Horsf.,) from Java and Sumatra; *S. spilogaster*, Bl., from Ceylon, and perhaps from S. India; and *S. holospilus*, Vigors, from the Philippines. The first of them is figured by Levaillant, Ois. d'Afrique, pl. 15, and was long thought to be African. But it does not occur in any of the authentic lists of African birds, though M. du Chaillu, the Gorilla-slayer, has it in his Fauna of Equatorial Africa. M. Le Vaillant, indeed, gives a long account of its habits, asserting it to be a great killer of the cape conies, (*Hyrax capensis*,) and even syllabizes its cry; but I fear alas! that this does not prove its authenticity as an African bird any more than du Chaillu's insertion of it in the list of birds obtained by him. V. 'Ibis' vol. 2, for a critique on Le Vaillant's Birds of Africa.

5th.—Sea Eagles, or Fishing Eagles.

Gen. PANDION, Savigny.

Char.—Bill short, curved from the cere, rounded above, tip produced, and much hooked, margin of upper mandible sinuated; nostrils small, narrow, obliquely transverse; wings long, reaching beyond the end of tail, 2nd quill longest, or 2nd and 3rd nearly equal; tail moderate, nearly even; the tarsus moderate, entirely covered with reticulated scales; toes quite free, outer toe versatile, longer than the inner toe; claws large, much curved, rounded below, nearly of equal size; soles of the feet covered with sharp-pointed scales.

The Ospreys differ structurally from other Eagles in the sternum narrowing somewhat posteriorly, and being slightly notched;

in the feathers wanting the supplementary plume; and in the intestines being very long.

40. **Pandion haliætus**, Linn.

Falco, apud LINNŒUS—GOULD, Birds of Europe, Pl. 12—BLYTH, Cat. 120—HORSF., Cat. 64—JERDON, Cat. 5—P. Indicus, HODGSON—P. fluvialis, SAV.—*Machariya*, H., also *Mach manga*, H., in Bengal,—*Machmoral* Beng; also *Bala*, Beng—*Macharang*, in Nepal—*Hegguli*, of the Yerklees—*Koramin gedda*, Tel—*Verali addi pong*, Tam.—*Pantiang*, Lepch.

THE OSPREY.

Descr.—Above, head and nape white, the feathers of the forehead and crown with dark brown stripes; upper plumage rich hair brown; quills blackish; tail pale brown, with dark bars, whitish on the inner web; a dark brown band from the eyes over the ears; beneath, pure white, with some brown spots on the breast, longitudinal in youth, broader in advancing age, and tending to coalesce in the fully adult. Irides bright yellow; legs and feet plumbeous yellow.

Length of a female 26 inches; wing 20; tail 9; tarsus $2\frac{1}{4}$; weight $3\frac{1}{2}$ lbs. Bill at gape $1\frac{5}{8}$; mid-toe $3\frac{1}{2}$. A male measured $23\frac{1}{2}$ inches; wing 19; tail $8\frac{1}{2}$.

The Fish-hawk of Europe is spread over all India, most abundant of course along the coast, where there are numerous backwaters and lagoons, but common along all the large rivers of India, and generally found at most of the larger lakes and tanks, even far inland. As is well known, it plunges from a great height into the water, and bears forth a goodly-sized fish, which its sharp claws and prickly soles enable it to carry easily, and if too heavy to be carried with ease, it can be readily dropped, owing to the rounded talons. It builds in this country on trees, but I have not procured their eggs, though I have seen their nests. It is frequently robbed of its well-earned prey by the *Haliætus leucogaster*. The Osprey is found over Europe, Asia, and Africa.

A very closely allied species occurs in America, and another in Australia, respectively *P. Carolinensis*, Gmel., and *P. leucocephalus*, Gould.

Gen. POLIOÆTUS, Kaup.

Char.—Bill somewhat lengthened, straight at the base, compressed, with a prominent sharp festoon; wings short; tail rather short, slightly rounded; tarsus feathered in front for one-third of its length, stout, covered in front with large transverse scales, posteriorly with some large, somewhat irregular, scales, externally and internally with very small scales; feet large, toes nearly covered above with large scuta; lateral toes nearly equal; middle and outer claws about equal, less than the hind claw; claws rounded.

This genus is by some included in *Pandion*, by others in *Haliætus*. It is indeed osculant between the two, but I think, with Blyth, worthy of a separate generic or sub-generic division. It differs from *Haliætus* by its shorter bill, and rounded claws; and from *Pandion* by its short wings, larger tail, and differently formed feet.

41. **Polioætus ichthyœtus**, HORSF.

Falco, apud HORSFIELD, L. T. XIII.—Zool. Res. Java, pl. 34—BLYTH, Cat. 121—Pandion, apud HORSF., Cat. 65—Haliætus, apud JERDON, Cat. 8—Pand. lineatus, apud JERD., Cat. 6—Hal. plumbeus, HODGSON—Icthyœtus bicolor, GRAY,—I. Horsfieldi, and I. lucarius, HODGS.—*Madhuya*, H.—*Machmorol*, Beng.

THE WHITE-TAILED SEA EAGLE.

Descr.—Adult, with the head, lores, ears, chin, and throat light grey, the rest of the plumage light wood-brown, darkest above, lighter beneath, and deepening on the scapulars and wings; lower abdomen, vent, thigh coverts, and tail white, the latter with a broad terminal dark brown band.

The young bird is lighter brown above, all the feathers edged and tipped with whitish, beneath pale reddish brown, with pale mesial streaks, and albescent on the under tail coverts; tail mottled and clouded with light cinereous and brown.

Irides brown; bill and cere blackish. Legs dirty yellowish white; length 27 to 29 inches; of one 29, the wing is 19; tail $8\frac{1}{2}$, tarsus $3\frac{1}{2}$; mid-toe nearly $3\frac{1}{2}$: weight 4 lbs.

This Fish-Eagle is found over a considerable part of India, but is rare towards the south. Mr. Elliot met with in Dharwar.

I never observed it myself south of the Nerbudda. I saw it frequently in the Saugor territories, and in Bengal. It extends to Burmah and all the Malay countries. It lives chiefly on fish, but will carry off a teal, or wounded duck; and strikes at other birds. I found its nest on several occasions; once near the Nerbudda, in a large tree, again near Saugor, on a tree on the top of a height overlooking a large tank; and in a tree, on the skirts of a village near the Ganges, opposite Rajmahal, I found a whole colony of nests of this Eagle.

The nest is a very large structure of sticks. In one nest there were unfledged young; the others were empty. Horsfield relates that he kept one alive for some time, and fed it on fish, and that it took copious draughts of water: the cry resembled that of the Osprey.

Another species of this genus is *Pontaetus humilis*, Temm. (*Icthyætus nanus* of Blyth,) from Malacca and the Islands; "a miniature" of our bird.

Gen. Haliætus, Savigny.

Syn.—*Cuncuma* (in part) Hodgs.—*Blagrus*, Blyth, (in part)—*Pontaetus*, Kaup.

Char.—Bill straight at the base, longish, compressed, curved towards the tip, which is much hooked; upper mandible with the margin strongly sinuate; nostrils somewhat oblong, transverse; wings long, 4th and 5th quills sub-equal and longest; tail moderate or rather short; tarsus moderate, strong, plumed for nearly half its length, the lower half with large transverse scuta in front, and a short and more irregular series behind (*Cuncuma*); or with a few and irregular ones in front above, and the whole of the rest reticulated with small scales, hexagonal, or irregular (*Haliætus*); toes large, covered with scuta; outer toe scarcely mobile; claws large, unequal, squared beneath, well-curved.

The Sea Eagles generally want the foramina in the sternum, which are present in the true *Aquilæ*.

42. **Haliætus fulviventer**, Vieill.

F. Macei, Temm., Pl. col. 223—H. Macei, Blyth, Cat. 124—Horsf., Cat. 67—H. albipes, Hodgson,—H. lanceolatus, Hodgs.,

—H. unicolor, Gray, Hardwicke's Ill. Ind. Zool. 1, Pl. 19 (the young bird after the first moult).

Macharang, H.; also *Mach-manga,—Koral, Machkorol*, and *Bala*, Beng.—*Kokna* and *Ugus* of the Coles in Central India, (Tickell); and also on the Ganges at Rajmahal.

The Ring-tailed Sea Eagle.

Descr.—Adult, whole head and neck pale fulvous, brownish on the head and nape, feathers of the neck long and lanceolate; interscapulars, back, and rump, rich brown; scapulars and wings dark brown, blackening on the quills; tail ashy black, or dark cinereous, with a broad white central band; beneath, from the throat, reddish brown, darkest on the lower abdomen, thigh coverts, and under tail coverts.

The young bird has the head and hind neck light brown; ear coverts dusky brown; the upper plumage brown, with the quills dark; tail black throughout; lower plumage pale brown.

Length 33; wing 25; exp. 7 feet; tail 10 inches; tarsus (feathered for half its length) 4; mid-toe and claw, $4\frac{1}{4}$; bill at gape 3; height $1\frac{1}{4}$.

Tarsus with a few large scales in front, below the feathers, gradually lost before the toes; all the rest of the tarsus with irregular hexagonal scales. The wings reach to the end of the tail, which is very slightly rounded.

This fine Fish Eagle is found throughout the North of India, most abundant in Bengal, and the countries to the westward. It ascends the Ganges and other large rivers to some distance, and is found in Nepal, and as far north-west as Cashmere, where Dr. Adams has observed it on the lakes and rivers. It is also common on the Indus. It is said to be found in the *Crimea*, and to be identical with *F. leucoryphus* of Pallas. But Mr. Newton on examining the sterna of *H. Macei* from India, and so called *leucoryphus* from the Crimea, found a considerable difference between them.—*Vide* Ibis, vol. 3, p. 223.

I have only seen it myself on the Ganges and Hooghly, and a few of their tributaries. It lives chiefly on fish, also on turtle, and snakes; and most probably will take other food, and often carries off a wounded duck. It does not, however, dive for fish like the

two last birds. It may often be seen seated on the high bank, or on a sand chur in the Ganges, or in a decayed tree near the edge of the river. It builds its nest in general on large trees, but I have also found it building on trees not more than 30 or 40 feet high, on the banks of the Ganges. It has a wild clanging cry. Hodgson, and Gray following him, place this species as *Cuncuma*, a sub-genus, separated from *Haliætus*, but only differing in the tarsus being less feathered in front, and with the scuta covering more of the bare portion.

43. **Haliætus leucogaster**, Gmel.

Falco, apud Gmelin—Temm.. Pl. col. 49—Horsf., Cat. 68—Blagrus leucogaster, Blyth, Cat. 123—F. blagrus, Daudin,—Jerdon, Cat. 7—F. dimidiatus, Raffles—Gould, Birds of Australia Pl. 3—Ichthyactus cultrungis, Blyth, (the semi-adult)—F. maritimus, Gmel.—*Kohassa*. H.—*Samp-mar*, Hind in Orissa—*Ala* Tel. and Tam.

THE GREY-BACKED SEA EAGLE.

Descr.—Adult, head, neck, and entire under parts, pure white; mantle and wing, pale blue grey: quills, and tail, cinereous black, the latter broadly tipped with white.

Irides brownish yellow; bill pale bluish, tipped dusky; cere pale greenish yellow; legs dirty white. Length 30 inches; wing 24; tail 10; tarsus $3\frac{1}{2}$; mid-toe with claw 4. A male measured 27 inches; wing $21\frac{1}{2}$; tail 9; tarsus $3\frac{1}{10}$; bill gape $2\frac{1}{4}$: height less than 1. The young bird has the mantle and wing coverts brown, the white parts fulvous white, tinged with rusty brown, and dusky, especially on the head, breast, and middle of abdomen; and the tail is dark with spots and speckles.

Wings reach beyond the end of the tail, which is much rounded, or somewhat wedge-shaped. Its talons have trenchant inner edges, and the feet are rough beneath; the intestines are elongated as in the Osprey.

It differs somewhat from *H. Macei* in its more sinuated bill, in the scutation of the tarsus, and the longer wings, the former character, and to some extent its coloration, allying it to *Pontaetus*,

from which, however, it differs in its long wings, and less feathered and longer tarsus. It was, indeed, formerly placed by Gray in *Pontaetus*, but is now ranged by that author in the sub-genus *Cuncuma*, along with *H. Macei*. It is the type of Blyth's genus *Blagrus*.

This Sea Eagle is found over all India, but chiefly on the coast, and for a short distance up some of the larger rivers. It lives chiefly on sea snakes, also on fish, which it picks up on the beach, or near the surface of the water, not diving for them. It also eats rats, crabs, and anything living it can catch, and will eat dead fish. It habitually preys on the osprey, pursuing it, and robbing it of its well-earned food. The natives assert, but probably without actual foundation, that when breeding, it makes a larder of fresh boughs with leaves, to place the fish on, to keep them fresh.

In Pigeon Island, 30 miles or so south of Honore, which is well wooded with large forest trees, a whole colony of these birds have their nests, at least thirty or forty of them; and the ground below their nests is strewed and whitened with bones of sea snakes chiefly, and also of fish. They breed in December, January, and February.

This species extends through Burmah, Malayana, and the Islands to Australia. It has usually been considered the same as *Le Blagre* of Levaillant, Ois. d'Afrique, 1, pl. 4, but it appears from late observations that the bird figured by Levaillant is probably a young *Hal. vocifer*.

Other well-known Sea Eagles are *H. Albicillus* of Europe, *H. leucocephalus* of North America, and North-east Asia, and *H. vocifer* of Africa. *Aquila vulturina*, of South Africa, has been made the type of the genus *Pteroætus*. *Aquila pelagica*, Pallas, appears to belong to the Sea eagles, and has been separated as *Thalassoætus*. If it is found that this splendid bird ranges far inland, it may have been the Eagle observed by Adams in the Himalayas, *vide* page 27. An American form of Sea Eagle has been distinguished as *Geranoaetus*, and Gray places the *Helotarsus ecaudatus* of South Africa also among the Sea eagles; but it appears to me to belong more to the group of Serpent eagles, with vulturine tendencies.

Polyboroides, too, formerly alluded to (page 17), appears to be a Serpent Eagle.

The genus *Morphnus* of South America appears to be a Buteonine type, and perhaps does not belong to the Eagles. *Thrasaetus*, or *Harpyia*, is a very powerful form, with a strong bill, crested head, and long, and very robust, but not very unequal, toes.

Sub-Fam. BUTEONINÆ, Buzzards.

Bill small or moderate, rather weak; wings long or moderate; tail short, or moderately long in a few; tarsi rather long, with scuta both in front and behind; feet short; hind toe short.

This sub-family contains the buzzards, harriers, and some allied forms. They are not, as a whole, well characterized apart from the eagles and some of the kites, but have generally longer legs than the kites, and though partly insectivorous, may be said to be more rapacious in their habits than the kites, and less so than the eagles. The head is usually depressed, and rather broad, longer than, but not so flat as, that of the eagles; the bill is short, broadish at the base, compressed at the tip, the sides sloping, not very convex, and the margin is generally festooned; the wings are long, ample, and rounded, the 3rd and 4th quills usually the longest; the legs are robust, firm, moderately lengthened, sometimes naked or half plumed, or, in a few, feathered to the toes, which are typically short, but with the toes and claws unequal in size.

In a general way, they may be said to be distinguished from the eagles by their smaller size, usually naked tarsi, more active habit, and a peculiar physiognomy and coloration; and from the kites by their longer legs and more unequal toes. The rough-legged buzzards, however, certainly approximate very closely to the eagles. The harriers differ a good deal from the ordinary type of the buzzards, approaching some of the kites in their coloring, but their unequal toes and other parts preclude them from entering that sub-family, and they might form a separate group, as indeed Blyth places them; but they certainly are osculant with the buzzards, through such birds as the marsh-harrier and *Buteo plumipes*, or *B. pygmæus*.

Gen. Buteo, Cuv.

Char.—Bill short, sloping from the base, tip hooked, margin of the upper mandible very slightly festooned; nostrils large, oval, transverse; gape wide; lores clothed with hair-like feathers; wings long, with the 3rd and 4th quills sub-equal and longest, 5th nearly as long; the inner webs of the first four quills strongly notched; tail moderate, or short, even or rounded; tarsi rather long, feathered on the upper third or further; tarsal scales broad, transverse; toes with four or five large scales at their extremity only; lateral toes very unequal; all the toes short.

The buzzards have the head large and depressed, and a stout, massive body; their flight is tolerably sharp for a time, though not sustained so for any length. They feed on insects, reptiles, young or feeble birds, and small mammals, which they pounce on generally from a perch on a tree, occasionally when questing.

44. **Buteo vulgaris**, Bechstein.

Blyth, Cat. 118—Falco buteo, Lin.—B. communis, Cuv.—F. cinereus, Gmel.—Pl. Enl. 419—B. rufiventer, Jerdon, Suppl. 21 bis—Jerd., Ill. Ind. Orn., pl. 27—*Tang pangtiong*, Lepch.

The Common Buzzard.

Descr.—Young, brown above, the feathers centred darker; wing dark brown; tail light yellowish brown, with dark bands; beneath more or less whitish, or yellowish white, streaked with brown on the throat, breast, belly, and thigh coverts, which are almost brown; the quills beneath are white, except near the tip; the tail whitish grey, faintly barred.

The adult is darker brown above, glossed with purple; the wings dark brown and barred; the tail light grey, or reddish grey, with seven or eight narrow brown bars, and a broader one near the tip; beneath brown, banded with white on the breast. In intermediate plumage there is more or less white on the throat, and the abdomen and thigh coverts are banded with white, or with white and rufous.

A specimen shot on the Neilgherries was pale brown above, each feather edged with rufous, more especially on the head and

neck; rump and upper tail coverts uniform brown; tail pale rufous, with narrow brown bars, the terminal one widest; quills grey brown, with brown bars, inner web white; wings beneath nearly pure white; cheeks and throat whitish, each feather centred rufous brown; the rest of the plumage beneath bright deep rufous, barred with white; thigh coverts darker, not barred.

Irides brown; cere and legs yellow. Length, male 21 inches; wing 15; tail 8; ext. 48; tars. $3\frac{2}{10}$.

A female measures 24 inches; wing 18; tail $9\frac{1}{2}$; tarsus $3\frac{1}{4}$; mid-toe and claw $2\frac{1}{2}$; bill at gape $1\frac{5}{8}$.

The European buzzard appears to be a rare inhabitant of the hilly regions only of India. I shot the specimen described above on the Neilgherries, near some swampy ground, and saw others on several occasions in similar ground, and some on the skirts of the woods. It has also been found in Nepal and Sikkim. I procured it at Darjeeling. It preys on lizards, frogs, mice and rats, shrews, and young or sickly birds. In Europe it frequents chiefly the more wooded regions, and builds both in trees and on rocks.

45. **Buteo canescens**, Hodgson.

Beng. Sport. Mag. 1836.—B. longipes, Jerdon, Cat. 21—B. rufinus, Ruppell, apud Blyth, Cat. 117—and Horsf., Cat. 71—*Chuhamar*, H.

The Long-legged Buzzard.

Descr.—Young, head, neck, throat, breast, and belly white, some of the feathers streaked with brown, and dashed with buff; back and wing coverts pale yellowish brown, some of the feathers edged with rufous; quills dusky brown, whitish on their inner webs, and the secondaries barred; tail with the outer webs reddish white, inner webs dirty whitish, barred with brown; cere greenish yellow; irides pale dun; legs pale yellow.

In a more advanced state of plumage the head and neck are rufescent brown, with a whitish eye streak; back and wing coverts darker brown, with a tinge of purple in the freshly-moulted bird, and many of the feathers edged with rufous; quills greyish on their outer web, with a dusky tip, and whitish internally, except at the

tip, which is black; tail pale rufous, or rufous grey, with a darker subterminal band, and some indistinct bars, and ashy white below; beneath, the throat is white, with dusky streaks, and the rest of the under parts fulvous white, with dusky and rufous blotches, forming a sort of gorget on the breast, and a more or less dark abdominal band; tibial feathers dusky rufous.

The adult bird is yellowish brown above, and on the throat and breast, purest on the head and breast, and many of the feathers, especially of the back, with dark centres, where the lighter tint indeed is nearly lost; quills, with the outer webs, greyish, the inner webs blackish from the tip to the deep sinuosity, white beyond; wings with a large white patch beneath, formed chiefly by the inner webs of the quills; tail reddish or cinnamon grey, indistinctly barred; belly, vent, thigh coverts, and under tail coverts, deep auburn brown, the line of demarcation between this and the lighter tint of the breast, abrupt and strongly marked.

Cere greenish yellow; irides golden yellow; legs dirty yellow.

Length, male, 23 to 24 inches; extent 56; wing 16 to 17; tail 9; tarsus $3\frac{1}{4}$; bill at gape 2.—Female 25 to 27 inches; wing 18 to 20; tail 10 to 11. The wings nearly reach to the end of the tail. Weight, male $2\frac{1}{2}$ lbs; female $3\frac{1}{4}$. In some the eye is dun or brownish yellow. It is large, and the eyebrows are very prominent.

This buzzard has been considered to be the same as *B. rufinus*, Rüppell, of North-eastern Africa, and the South-east of Europe; and it is certainly very closely allied to it. Bonaparte, however, puts it as a distinct species, and in this he is followed, I believe, by our best ornithologists.

This handsome Buzzard is found throughout all the northern and central parts of India, frequenting the plains and low cultivated lands, especially irrigated fields, edges of tanks, &c. I have met with it in the Deccan, and in Central India, but most abundant in the Gangetic valley above Dinapore. It is also found in Nepal, and all the sub-Himalayan regions. It generally sits on a low tree, and watches for rats, frogs, lizards, and large insects, which it pounces on from its perch, or rarely takes a hunt over

the ground in quest of food. Mr. Elliot says, it is very abundant in Guzerat, preying on the numerous field rats of that province (*Mus indicus*). Captain Irby took four rats swallowed whole out of the stomach of one he killed in Oude. Mr. Hodgson says, 'Feeds on snakes, rats, and mice; also on quail, snipe, and partridges, which, however, it only seizes on the ground.' He also says that it kills duck and teal, but he attributes to it a much speedier flight than my experience has shown.

Mr. Theobald found the nest in March, on trees, large, made with sticks, lined with cotton, rags, &c., and daubed with mud. The eggs were three, greenish white, blotched with claret brown; but they vary greatly.

46. **Buteo aquilinus**, Hodgson.

J. A. S., XIV., 176—B. leucocephala, Hodgson, P. Z. S., 1845, p. 37.

The Upland Buzzard.

Descr.—General color above hair brown, the feathers edged with dull rufescent brown; ear coverts and sides of head white, the feathers more or less dark shafted; nape whitish, the throat white, the feathers streaked with brown; foreneck brown; breast white, with dark shafts and tips to the feathers; abdominal region, flanks, and tibial plumes, dark brown, slightly edged rufous towards the breast, and the axillaries more vividly rufescent; forepart of the under surface of the wing dusky brown, the primaries freckled white, blackish beyond the emargination; tail mottled with numerous dark bars, on an albescent ground.

Bill and cere dark; feet wax-yellow. Tarsus plumed in front for $1\frac{3}{4}$ inches. Length of female 26 inches; wings $18\frac{1}{4}$; tail $11\frac{1}{2}$; bill, straight to forehead, $1\frac{1}{2}$; tarsus $3\frac{1}{8}$.

This fine Buzzard, which apparently closely resembles the European Buzzard, has only been found in the snowy region of the Himalayas, and perhaps may be peculiar to Tibet. It appears, says Mr. Blyth, to resemble the description of *Falco Asiaticus* of Latham. Gray and Bonaparte put it as an *Archibuteo*, and make

it the same as Hodgson's *Aquila strophiata*, which Horsfield gives as synonymous with *Aquila pennata*.

47. Buteo plumipes, Hodgson.

Beng. Sport. Mag. 1836, p. 182.—J. A. S. XV., 2—P. Z. S. 1845, p. 37.

THE HARRIER BUZZARD.

Descr.—'Dusky brown throughout, as in the moor buzzard; lores albescent; tail vaguely rayed paler; wings do. internally; of a slender make, circine; claws long, acute; cere and legs greenish yellow; bill blue. Length 19½ inches; tail 9; tarsus 3. From the central region of Nepal.'

It does not appear that specimens of this bird exist in any of our Museums. It is somewhat similar in color to the Marsh Harrier. It is not unlikely the adult female of Blyth's *Buteo pygmæus*, J. A. S. XIV., from Tenasserim, which has a very circine make and aspect. This is certainly an osculant form, having the bill and wings of *Circus*, with the short feet of a Buzzard. If it be not the same as Hodgson's species, it will probably, with it, form a new division among the Buzzards, leading to the Harriers.

Several species of true Buzzard are found in Africa. Other species of this sub-family are found in America; but some of these belong to slightly different types.

Gen. POLIORNIS, Kaup.

Syn. *Butastur*, Hodgson.

Char.—Bill rather short, gradually bending from the base; edge of mandible scarcely festooned; nostrils rather small, pyriform; wings long, reaching nearly to the end of tail, which is moderate and slightly rounded; 3rd and 4th quills nearly equal and longest, the four first quills emarginate; legs and feet moderate, stout; anterior scuta of tarsus large; feet short, upper surface covered with large broad scales; inner toe, without the claw, shorter than the outer one.

This genus is certainly very close to *Buteo*. Horsfield places it, as Gray did formerly, among the *Accipitrinæ*; Gray in the *Aqui-*

linæ; and Blyth in his *Circinæ*. Franklin made it a *Circus*, Sykes an *Astur*, and Kaup a *Circaetus*. It differs somewhat from *Buteo* in its less corpulent form, and general adaptation for more active habits, in its less strongly scutellated tarsi, and stronger talons; but it is essentially a Buzzard, as shown by its short feet, by the white under wing, the rufous tail, and by its habits. It is confined to India and Malayana.

48. **Poliornis teesa**, Frankl.

Circus, apud Franklin, P. Z. S. 1831—Blyth, Cat. 93—Horsf., Cat. 50—Buteo teesa, Jerdon, Cat. 22—Gray, and Hardw., Ill. Ind. Zool. 2., pl. 30—Astur Hyder, Sykes, Cat. 12—*Tisa*, H.—*Buda-mali gedda*, Tel.—*Yellur* of the Yerklees.

The White-eyed Buzzard.

Descr.—Young bird, brown above, paler and rufescent on the head, with a white eyebrow, and nuchal spot; wing coverts much mottled with white, forming a light wing spot; quills pale brown, banded darker, and white beneath; tail pale rufescent, with dark bars on the inner webs, and on both near the tip; beneath white, or fulvescent, some of the feathers streaked with brown, especially on the breast and flanks.

The adult bird has the upper plumage somewhat rufescent brown, some of the feathers dark shafted; the forehead white, and a conspicuous white nuchal mark; the wing coverts mottled light brown and whitish; the quills pale brown, with narrow dark bars, and a dark tip, and the winglet dark brown; tail pale rufous, with the bars more indistinct; beneath, chin and throat fulvescent, or white, with a central dark chin stripe, and a lateral one on each side, bounding the light chin; the rest of the lower parts hair brown, banded on the abdomen, and less so on the breast, with white bars; thigh-coverts faintly barred with rufous, and the under tail coverts unspotted fulvescent white.

Length of a female 18 inches; wing $11\frac{3}{4}$; tail $6\frac{1}{4}$; tarsus $2\frac{5}{8}$; mid-toe and claw $1\frac{3}{4}$; bill at gape $1\frac{1}{4}$.—A male is about 16 to 17 inches. Iris pale brown, or dun, in the young bird, stone-white in adults.

The *Teesa* is spread over great part of India, very abundant in some districts, in fewer numbers towards the south, and rare in the moist and wooded provinces of Malabar and Lower Bengal, but found in Assam, Burmah, and Malayana.

The white-eyed Buzzard frequents both cultivated ground, bare open plains, and low jungle. It may be seen seated on trees, bushes, ant-hills, and river banks, whence it pounces on rats or mice, lizards, small snakes, frogs, crabs, and large insects. Now and then it may manage to seize a young or sickly bird, but I have never witnessed this myself. Mr. Burgess states that he took from one the remains of a full-grown quail.

The flight of this Buzzard is tolerably rapid, performed by repeated and rapid strokes of the wings, and is very much like that of the Kestril, for which at a distance I have sometimes mistaken it. It flies generally low and close to the ground. It not unfrequently runs along the ground for a few yards, and I have seen it run up to and seize an insect. I have sometimes seen one take a more extended flight than usual over a grass rumna, keeping low down, but rising every now and then, and occasionally capturing a locust on the wing. It has a very peculiar plaintive cry, which it is frequently heard uttering, and in confinement it is very noisy, and easily domesticated.

The Teesa breeds on trees, laying usually 4 white eggs, in April and May. Burgess, indeed, states that the eggs he met with were white, spotted and daubed with brown; but I have always found them white, barely sullied sometimes with faint marks. Two or three other species of *Poliornis* are recorded from Malayana, one of them, at all events, doubtfully distinct from our Indian bird.

Gen. ARCHIBUTEO, Brehm.

Syn. *Butaetus*, Lesson.

Char.—Very similar to Buteo, but with the tarsi feathered to the toes, and somewhat lengthened.

This genus was founded on the European rough-legged Buzzard, *A. lagopus*, and only contains two or three species.

49. **Archibuteo hemiptilopus**, Blyth.

J. A. S., XV., 1—Blyth, Cat. 116—Horsf., Cat. 618—A. cryptogenys, Hodgson, Calc. J. N. H., 1847.

The Brown Eagle Buzzard.

Descr.—Above rich deep fuscous brown, slightly glossed with pink, interscapulars shading to fulvescent; feathers of nape white except at the tip; head mingled whitish and brown; a large blackish moustache from the base of the lower mandible; breast fulvescent, the feathers tipped brown; abdomen, flanks, vent, lower tail coverts, tibial and tarsal plumes, uniform rich dark brown, almost blackish; quills dusky, some of them faintly barred; tail narrowly barred throughout with dusky and pale, and a broadish subterminal band, albescent beneath, and the stems of the feathers white.

Bill dusky, yellowish at the base; cere wax-yellow; toes wax-yellow; tarsus feathered to the toes in front, and externally, bare and scutellated behind. Length 28 inches; wing $20\frac{1}{4}$; tail 13; bill at gape 2; tarsus 3; hind toe and claw $2\frac{1}{4}$.

This fine rough-legged Buzzard has been procured in Nepal and Sikim, and also in Tibet. Its feet are remarkably small for its large size and robust form. The wings do not nearly reach the end of the tail, and the tarsi are feeble. Nothing is recorded of its habits.

Other species of *Archibuteo* are *A. lagopus*, of Europe, *A. St. Johannis* of North America, and *A. ferrugineus* of Mexico.

Gen. Circus, Lacepede.

Syn.—*Pygargus*, Koch.—*Strigiceps.*, Bon.

Char.—Bill short, weak, high at the base, compressed, sloping, moderately hooked at tip, a slight festoon in the middle of the margin of upper mandible; cere large, covered with setaceous curved plumes; lores covered with small feathers and bristles; ears large, the coverts and the lower parts of the face partly surrounded by a ruff of small thick-set feathers, forming an imperfect disk; wings long, 3rd and 4th quills longest; tail long, slightly rounded; tarsi long, slender, well plumed at the knee, smooth, with large transverse

scuta in front; toes rather short, not very unequal; talons sharp, well curved; hind toe short.

The Harriers are a well marked group found over all the world, characterized by a slender form, a soft and somewhat downy plumage, and hence a noiseless flight; generally of light grey color in the males, brown in the females, with rather large eyes and ears, and they clearly form the nearest link among the *Falconidæ* to the Owls, by their facial disk and soft plumage. In their habits they are more on the wing than most birds of prey, and hunt near the ground. They feed on insects, reptiles, small mammals, and young and sickly birds, and always roost on the ground. They are found all over the world. Some naturalists divide them into two sub-genera, the one typified by the Marsh Harrier, the other by the Common Harrier.

1st.—True Harriers.

Strigiceps, Bon; *Spilocircus*, and *Glaucopteryx*, Kaup.

50. **Circus cyaneus,** Lin.

Falco, apud Linnæus—Blyth, Cat. 89—Horsf., Cat. 29—F. pygargus, L. (the female)—F. albidus, Gmel.—Gould, Birds of Europe, pl. 33.

The Hen-Harrier.

Descr.—Male, above, pale bluish grey, darker on the centre of the back, pearly grey on the throat and breast; tail grey, the inner webs of most of the feathers paler, changing to white on the outermost pair, and very obscurely banded; the upper tail coverts, belly, vent, thighs, inner wing coverts and axillaries, pure white.

Length 16 to 17 inches; wing 14; tail 9.

The female is umber brown above, edged lighter; the feathers of the ruff, (which is well marked) yellowish white, streaked with brown; quills brown; rump pure white; tail barred with umber and yellowish brown; beneath ochraceous, streaked with brown, except on the thighs and under tail coverts.

Length 18 to 20 inches; wing 16; tail 10; tarsus 3; middle toe and claw $1\frac{5}{8}$. The auricular feathers are long and loose in their structure. The wings do not reach to within $1\frac{1}{2}$ inches of the end of the tail.

The European Harrier has only been found as a winter visitant in India in Bootan, Nepal, Kumaon, and the North-western Himalayas, perhaps extending to the plains in the Punjab only.

51. **Circus Swainsonii**, A. Smith.

Illust. S. African Zool., pl. 43, 44—Blyth, Cat. 90—Horsf., Cat. 30—C. pallidus. Sykes, Cat. 15—Jerdon, Cat. 23—C. Albescens, Lesson—C. dalmaticus, Rupp.—Falco herbæcola, Tickell—*Dastmal*, H. vulgo *Girgut Mar. i. e.* Lizard-killer—*Pattai*, H. of some—*Tella chapa gedda*, Tel.; also *Pilli gedda*, Tel—*Puna prandu*, Tam., the two last names meaning Cat kite—*Golpuli* of the Yerklees—*Tera* of Dirajat—*Pandouvi*, Beng.

The Pale Harrier.

Descr.—Male, above pale grey; wings and back darker; beneath greyish white; rump white, banded with greyish; tail-feathers, except the two centre ones, banded grey and white; 3rd, 4th, and 5th quills dusky.

Length 18 to 19 inches; wing $13\frac{1}{2}$ to 14; tail $9\frac{1}{2}$.

The female is brown above, the feathers of the head and neck edged with rufous; beneath, dark ochraceous, with brown streaks, continued on to the lower tail coverts; upper tail coverts banded whitish brown; tail, with the centre feathers, greyish, the outer ones pale rufous, all with dark bands.

Length 20 to 21 inches; wing $14\frac{1}{2}$; tail 10; tarsus not quite 3; mid-toe and claw $1\frac{3}{4}$.

This species differs from the common Harrier chiefly in the paler plumage, the white throat and breast, and in the banded rump. It has also a shorter tarsus. The wings reach to less than 1 inch from the end of the tail.

This Harrier is exceedingly abundant throughout all India, coming in at the beginning of the cold season, September to October, and disappearing in March or April for the purpose of breeding. Burgess speaks of his having heard that they sometimes breed in this country, and got some eggs which were said to be those of this species; but I have no doubt that he was misled, and that the eggs were probably those of *Elanus*

melanopterus. It frequents open, stony plains, and cultivated ground, occasionally flying through a cantonment. It hunts the plains, regularly beating and squaring its ground, and occasionally hunting along hedgerows, or the edge of some thick bush. It feeds chiefly on reptiles and insects, also occasionally on small mice and shrews, and weak, or sickly, or wounded birds, especially quails. I have once only seen it perched on trees. In general it perches on a stone, or a mound of earth, or ant-hill, or even on the ground. Its powerful sense of hearing must be of great use to it when seated on the ground at night, to give it warning of the approach of any animal, but yet occasionally it is surprised at night by a jackal, fox, or mongoose, for I have not unfrequently found its feathers on the bund of a field. The flight of the Harrier is usually slow, a few beats alternating with a sailing motion, but it is capable of, and now and then takes, sudden flights of considerable energy after a bird which it thinks it can capture. The sudden way with which it can stop in its flight, and drop down on the ground on some quarry, must have been witnessed by many. Its stealthy, noiseless mode of flight, and the sudden pouncing on its prey, have gained for it the appropriate Telugu and Tamul name of cat-kite.

It is widely spread through Asia, Africa, and the South East of Europe.

52. **Circus cineraceus**, MONTAGUE.

Falco, apud MONTAGUE—BLYTH, Cat. 91—HORSF., Cat. 32—JERDON, Cat. 24—C. Montagui, VIEILL.—C. Nipalensis, HODGSON—GOULD, Birds of Europe, pl. 35, (the same native names as the last).

MONTAGUE'S HARRIER.

Descr.—Male, above, throat and breast darkish blue grey, darkest on the back; the first six quills black, the next one lighter, changing to grey; secondaries grey, with a black bar; tail grey, the outer two feathers barred on their inner webs with bright rufous, the other three with dusky; belly, vent, under tail coverts, and under wing coverts, white, with bold dashes of rich chestnut or reddish brown.

The female chiefly differs from the female of the last in colour by the lower parts being whiter, and the streaks much larger and more rufous brown.

The wings are comparatively long in this species, reaching to the end of the tail; the tail also is long, and the tarsus considerably shorter and feebler than in the last. Much lighter in weight than *C. Swainsonii.*

Irides yellow; legs yellow. Length of male $16\frac{1}{2}$ to 17 inches; wing 14 to 15; tail 9; tarsus $2\frac{3}{4}$; mid-toe and claw $1\frac{5}{8}$. Of a female the length is $18\frac{1}{4}$; wing $14\frac{3}{4}$ to 15; tail $9\frac{1}{2}$; tarsus 3; mid-toe and claw $1\frac{8}{10}$.

This Harrier is equally abundant with the last, in some localities more so perhaps, and in its habits it does not differ, and it has a nearly equally wide distribution through Europe, Asia, and Africa. I have found it in every part of India. Like the others it is migratory, and is, I think, generally somewhat later in making its appearance in this country.

53. **Circus melanoleucos**, Gmel.

Falco, apud Gmelin—Jerdon, Cat. 26—Blyth, Cat. 92—Horsf., Cat. 31—Le Vaill. Ois. d.'Afrique, 1 pl. 32—*Pahatai*, Hind—*Ablak Petaha* in Nepal.

The Pied Harrier.

Descr.—Whole head, neck, breast, back, upper scapulars, middle wing coverts, and primary quills, black; the greater coverts and secondaries, and some of the scapulars, beneath the others, pale grey; the lesser coverts and shoulders partially white, mixed with some grey; upper tail coverts mixed white and grey; beneath from the breast pure white; tail pure grey, unbarred; paling on the outer feathers.

Bill and cere black; irides yellow; legs yellow. Length 17 to 18 inches; wing 14; tail 8; tarsus $2\frac{7}{8}$; mid toe and claw $1\frac{5}{8}$. The wings reach nearly to the end of the tail. Sexes alike. The young birds appear to be coloured like their parents, at least no specimens in different plumage have been observed in India.

This handsome Harrier is less generally spread over India than the two last species, but is found in abundance in many districts, especially where rice cultivation is carried on, as on the Malabar Coast, in parts of the Carnatic, and in Mysore. It is rare in the Deccan and Central India, but common in Bengal. Capt. Irby remarks that this species is never met with far away from grass jungles, where it appears to replace the preceding species. This is quite contrary to my observations of it in Southern India. Like all the others, this Harrier is migratory, and probably breeds like the rest, in Central Asia, but it is not enumerated by Pallas in his Zoology of Russian Asia.

Marsh Harriers.

Circus of Bonaparte. This is a stouter and more robust form, and has both bill and legs also proportionally stouter.

54. Circus Æruginosus, Lin.

Falco, apud Linnæus—Blyth, Cat. 88—Horsf., Cat. 33—F. rufus, Gmel.—Jerdon, Cat. 25—C. variegatus,—Sykes, Cat. 16—C. Sykesii, Lesson—Gould, Birds of Europe, pl. 32—*Kutar* and *Kulesir H.*—*Mat-chil*, Beng., *i. e.* Meadow Kite—*Sufeid sira*, (*i. e.* white headed,) and *Tika Bauri*, of Mussulmans in Bengal.

The Marsh Harrier.

Descr.—The young bird is uniform dark reddish umber brown. In a further stage the head and throat are yellowish, or rufous white, with dark stripes on the crown. In some the head is pure white, and the upper tail coverts and base of the outer tail feathers are pale reddish.

In the fully adult the head, neck, and breast are pale rufous, with dark brown stripes, deepening to dark red brown on the belly and thigh coverts; upper tail coverts marked with red, white, and brown; the shoulders, secondaries, and tail, pure silvery grey; back, scapulars and tertiaries, deep brown; primaries black. The bird in this state of plumage does not appear, as I learn from Mr. Blyth, to have been killed in Europe, and the figures in Yarrell and Gould were taken from Indian specimens. This constitutes the Asiatic Marsh Harrier as a very remarkable race, at all events.

Length of a male 19 to 21 inches—female 22 to 23. In one $21\frac{1}{2}$, the wing is 16; extent 56; tail 9; tarsus $3\frac{1}{4}$; mid-toe and claw nearly 2; weight 1lb. 2oz. In a female $22\frac{1}{2}$ inches, the wing is 17, and tail $9\frac{3}{4}$.

Irides yellow in the adult; brown in the young.

The Marsh Harrier is generally spread through India, frequenting banks of rivers, lakes, marshes, and inundated fields, or wet meadow land, occasionally hunting over grass or dry grain fields. It feeds chiefly on frogs, fish, water insects; also on rats, shrews, and various young or weakly birds. It not unfrequently carries off wounded snipe and even teal, and often follows the sportsman.

Several other Harriers are found in Africa, some in Australia, and others in America.

Sub-fam. MILVINÆ,—Kites.

Bill typically small and weak, occasionally stout, rather straight at the base, and suddenly hooked, or curved from the base, and much hooked at the tip, rounded at the sides and compressed only at the tip, the margin sinuated or toothed; wings long; tail short and even, or long and forked; tarsi short, rather thick; toes short, broad; claws moderate, not very unequal.

The kites, as characterized above, contain several well marked forms, of which we have five representatives in India, and there are others in Africa and America. They are birds of rather small or moderate size, and most of them are but little rapacious in their habits, feeding on insects, mice, lizards, and occasionally young or sickly birds, and some on garbage or carrion. As a whole, they differ from the buzzards by their shorter tarsi, and feet, with more equal toes and claws; and the more typical ones (for I do not consider *Milvus* and its affines as typical of the group, though the name of kite is adopted from them) by a peculiar mode of coloration. On the one hand, they may be said to join the eagles or buzzards; and on the other, perhaps, they tend towards the falcons by such birds as *Baza lophotes*, which has been placed by some systematists among the *Falconinæ*.

I shall begin this family with a bird which may be said to lead the way from the kites to the eagles, among which last, indeed, it is often, but I think erroneously, classed.

Gen. Haliastur, Selby.

Syn. *Ictinaetus*, Kaup, *Dentiger*, Hodgson.

Char.—Bill rather stout, straight over the cere, curved and hooked beyond margin of the upper mandible, festooned (as is very prominently seen in young birds); nostrils oval, oblique; wings very long, the 4th quill longest; tail moderate, broad, slightly rounded; tarsi short, moderately stout, with a large plume of feathers at the knee, covered anteriorly and posteriorly with large scuta; lateral scales small, reticulate; feet small, lateral toes unequal; claws not very unequal, grooved beneath, inner and hind claw about equal; toes rough beneath, with sharp points.

From India and Australia.

55. **Haliastur Indus**, Bodd.

Falco, apud Boddaert—Pl. Enl. 416—Blyth, Cat. 125—Horsf., Cat. 69—Haliœtus ponticerianus, Sykes, Cat. 5—Milvus ponticerianus, Jerdon, Cat. 17—M. rotundicaudus, Hodgs. (the young)—*Bahmani Chil*, H.—*Ru mubarik* of Mussulmans,—*Sunker chil, i. e.*, Shiva's Kite, and *Dhobia chil*, or Washerman's Kite, in Bengal;—*Khemankari*, Sanscrit—*Chuha-mar*, at Saharunpore—*Ratta Ookab*, also *Pilyo* in Sindh;—*Garuda*, Can.—*Garud-alawa*, Tel., or *Garuda-mantaru*—*Shemberrid* of the Yerklees.—*Pis genda* of the Gonds—Brahminy Kite of Europeans in India.

The Maroon-backed Kite.

Descr.—Adult, head, neck, and body below, as far as the middle of the abdomen, white, with longitudinal narrow streaks of dark brown; the rest of the plumage rich chesnut rufous, darkest on the interscapulars and back; quills black, chestnut internally towards the base; tail paling towards the tip inches.

Length 21 inches; wing $16\frac{3}{4}$; ext. $4\frac{1}{2}$ feet; tail $6\frac{1}{2}$ to 7 inches; tarsus $2\frac{1}{4}$; mid-toe and claw $2\frac{1}{8}$; bill at gape $1\frac{1}{2}$; height $\frac{3}{4}$.

The young bird is pale brown, the feathers of the head, neck, and lower parts lighter, streaked, and the upper feathers spotted, with

fulvous or whitish; the tail is dusky, with a tinge of maroon. The wings reach somewhat beyond the end of the tail. A specimen in the Museum As. Soc., Calcutta, has the feathers that are white in the fully adult pale ferruginous, slightly centred paler.

Its peculiar mode of coloration, sometimes insisted on as showing its relation to *Haliætus*, is equally corroborative of its affinity to some of the kites; and aquatic habits are far from being unknown in this family, witness *Ictinia Missisipiensis* of Wilson.

There has been, and is still, considerable diversity of opinion as to the position of this bird. Swainson put it in the Accipitrinæ. Most naturalists place it among the Sea eagles. Others, looking more to its habits perhaps, place it among the kites, and in the main I agree with these, acknowledging, however, its relationship with the Sea eagles, which Blyth extends also to true *Milvus*. It may be considered either an aberrant form of *Haliætus*, leading to the kites, or an aberrant kite leading to the Sea eagles; and its small size and near affinities to *Milvus* have decided me to class it with the kites.

The Brahminy Kite is found throughout all India, abundant on the sea coasts, and in the vicinity of lakes and wet cultivation; rare in the dry plains of Central India and the Deccan. Colonel Sykes says that it "usually seizes whilst on the wing, but occasionally dips entirely under water, appearing to rise again with difficulty." This I have never witnessed, nor has any one I have questioned on the subject, and their name is legion. He also says, "it is quite a mistake to suppose it feeds on carrion." Mr. Smith, as quoted in Notes on Indian Birds, P. Z. S., 1857, p. 85, says—"This bird is among the first objects which attracts the eye of a stranger, for they swarm about the shipping at Calcutta, and are useful in removing any offal which may be thrown away; but though their usual food is carrion, yet they kill fish, and not unfrequently carry off a snipe which the sportsman has levelled." Hodgson says, it chiefly feeds on insects and quests like a *Circus*. From my own observations it certainly prefers aquatic food, and is most numerous in the vicinity of sea-shores, large rivers, tanks, and rice cultivation. About large cities and towns, and where there is much shipping, it gets its chief food from garbage and

offal thrown overboard, or, occasionally, from what is thrown out in the streets and roads. Near large rivers or lakes it manages to pick off the surface of the water small fishes, or a prawn occasionally; but its chief food, away from towns and cantonments, is frogs, and crabs, which abound in all rice fields, and the remains of which last, picked clean, may be found so abundantly along the little bunds that divide the fields from each other. It will also eat water insects, mice, and shrews, and young or sickly birds; and many a wounded snipe I have seen carried off by the Brahminy Kite. In wooded countries I have seen it questing over the woods, and catching insects, especially large Cicadæ, and I have also seen it whip a locust off standing grain. Now and then it gives hot chase to a crow, or even to a common kite, and forces them to give up some coveted piece of garbage or dead fish; when thus employed, it exhibits considerable speed and great energy. It is much on the wing, soaring lazily about cantonments, or up and down rivers; but after a time seats itself on some palm or other tree, on the mast of a ship, and even on the ground. Near cities it is very tame and fearless, and I have often seen one catching fish thrown up to it by some pious Hindoo. It is said sometimes to carry off young chickens and pigeons, but I have not myself witnessed this. If the food it has seized be small, it devours it as it flies; but if large, it generally sits down on the ground, or the bund of a paddy field, or carries it off to a lofty tree.

The Brahminy Kite breeds on trees, in February and March, making a not very large nest of sticks, sometimes lined with mud, and laying generally only two eggs, which are sometimes dirty white, at other times white, with a few rusty brown spots. In the Carnatic it usually selects a palm tree to build in. Layard says that it makes several false nests, and that, whilst the female is incubating, the male generally occupies one of the nests first made. It has a peculiar, rather wild, squeal; but it is not so noisy a bird as its more plebeian relation, the pariah-kite. It is, as is well known, sacred to Vishnu; hence the name of Brahminy Kite given it by Europeans in India. The Mussulman name *Rumubarik*, or lucky face, arises from an idea that when two armies are about to engage,

the appearance of one of these birds over either party prognosticates victory to that side.

H. leucosternus, Gould, from Australia, is very close to our Indian bird, and *Milvus sphenurus*, Vieillot, is by some also placed as a third species of Haliastur.

Gen. MILVUS, Cuvier.

Char.—Bill short, somewhat straight at the base, tip well curved and hooked, upper mandible with a rounded obsolete tooth or festoon, nostrils oval, oblique; wings long, 4th quill, or 3rd and 4th, longest; tail lengthened, forked or emarginate; tarsus short, plumed above in front, with scntar in front below; posteriorly naked to the knee, reticulate; toes rather short, claws moderate, unequal, moderately curved; onter toe slightly mobile.

This genus, though differing a good deal from what I consider to be the typical kites, yet resembles them in its short tarsus; and the only other forked tail bird of prey belongs to this family (*Nauclerus*). Although near *Buteo*, it differs considerably from it, especially in its short tarsi. and long tail, and its habits are very different. It may be said to represent in this sub-family the Eagles, as the last bird does the sea-eagles.

Asia, Africa, and Australia. They are much on the wing and fly with ease and grace in large circles. They live chiefly on refuse, but also eat insects, reptiles, and young and sickly birds and animals. They build both on trees, and on rocks or buildings.

56. **Milvus Govinda**, SYKES.

SYKES, Cat. 17—HORSF., Cat. 17—GOULD, Birds of Asia, pl. 52—M. cheele, apud JERDON, Cat. 16—M. indicus, or cheela, HODGSON—Hal. lineatus, GRAY and HARDW., Ill. Ind. Zool. I., pl. 18, (young)—M. ater, apud BLYTH, Cat. 127—*Chil.* H.—*Malla gedda*, Tel.—*Paria prandu* Tam.—*Genda* of the Mharis.

THE COMMON PARIAH KITE.

Descr.—Adult, head and neck pale brown, or rufous, or reddish,* with dark central streaks; upper plumage brown, paler on the shoulders and lesser wing coverts, quills brownish black, tail

ashy brown, obsoletely barred, and narrowly pale tipped; beneath, and under wing coverts, reddish brown, the feathers with a central dark longitudinal streak, and edged paler; a narrow black line from the lores over the eye and ears.

Length of a male 23 to 24 inches; of a female 25 to 26 inches; wing $18\frac{1}{2}$; tail 12, to end of outer feathers; centre feathers $2\frac{1}{2}$ inches shorter; tarsus 2, or $2\frac{1}{4}$; mid toe $2\frac{1}{8}$; bill at gape $1\frac{3}{4}$.

The young bird is brown, numerously spotted with whitish, or fulvous tawny, streaked on the head, neck, and lower parts, and the other feathers edged and tipped pale.

The common Indian Kite is very closely related to *M. ater* of Europe, and was considered the same by Mr. Blyth in his Catalogue. It is, however, now recognised as distinct. It extends through all India, Burmah, and Malayana, but in China appears to be replaced by a very closely affined race, *M. melanotis*, Tem. and Schl.

It is one of the most abundant and common birds in India, found at all elevations up to 8,000 ft. at least, especially near large towns and cantonments, and its vast numbers and fearlessness are among the first objects that strike the stranger from England, where birds of prey are so rare. Every large town, cantonment, and even village, has its colony of Kites, which ply their busy vocation from before sunrise to sometime after sunset. Every large camp, too, is followed by these useful scavengers, and the tent even of the single traveller is daily visited by one or more, according to the numbers in the neighbourhood. As is well known, Kites pick up garbage of all kinds, fragments of meat and fish, and generally the refuse of man's food. When a basket of refuse or offal is thrown out in the streets to be carted away, the Kites of the immediate neighbourhood, who appear to be quite cognizant of the usual time at which this is done, are all on the look-out, and dash down on it impetuously, some of them seizing the most tempting morsels by a rapid swoop, others deliberately sitting down on the heaps along with crows and dogs, and selecting their scraps. On such an occasion, too, there is many a struggle to retain a larger fragment than usual, for the possessor no sooner emerges from its

swoop, than several empty-clawed spectators instantly pursue it eagerly, till the owner finds the chase too hot, and drops the bone of contention, which is generally picked up long before it reaches the ground, again and again to change owners, and perhaps finally revert to its original proprietor. On such occasions there is a considerable amount of squealing going on.

The vast numbers of these Kites in large towns can hardly be realised by strangers. Capt. Irby mentions having seen one hundred together, but in Calcutta and elsewhere two or three hundred may be seen at one time. They are excessively bold and fearless, often snatching morsels off a dish *en route* from kitchen to hall, and even, according to Adams, seizing a fragment from a man's very mouth; and several anecdotes illustrative of this are told by different observers,—*vide* Blyth, Sykes, Adams, and Burgess. At our sea ports many Kites find their daily sustenance among the shipping, perching freely on the rigging, and, in company with the Brahminy Kite, which rarely enters towns, snatching scraps of refuse from the surface of the water.

Away from the haunts of man, some seek their reptile or insect food over the fields and hedgerows, or, with the Brahminy Kites, hunt the edges of tanks, rivers, and marshes, for frogs, crabs, and fish.

The flight of the Indian Kite is bold, easy, and graceful when once mounted aloft, though somewhat heavy on first taking wing; and it soars slowly about, in greater or less numbers, in large circles. When in pursuit of another Kite it is capable of considerable speed, and shows great dexterity in suddenly avoiding any obstacle, and changing its course; in this, its long tail is, of course, a great help. Occasionally one may be seen dropping down almost perpendicularly from the top of a house on a piece of offal in a narrow street, but, in general, it reaches the ground from a height by a series of oblique plunges.

Now and then one will seize a chicken or wounded bird of any kind, and Mr. Blyth mentions that he once knew one to kill a full-grown hen. Mr. Phillips says it is "a very cowardly bird; for though it will carry off parrots and chickens, it is yet afraid of

the crows and sparrowhawks. It will allow crows to pull to pieces a bit of meat before it, which it is evidently desirous to obtain." This hardly accords with my observation; for though it is in general on sufficiently good terms with the crows in company with it on a heap of garbage, yet I have frequently seen it pursue a crow, and force it to relinquish some coveted morsel. Blyth, too, mentions that he had been told on good authority that a kite will sometimes seize a crow. The crows, however, often tease a kite, apparently without any object, but that of a little amusement to themselves. The food of the kite is usually devoured on the wing, or, if too large, carried to the nearest house or tree.

Mr. Blyth notices their collecting in numbers without any apparent object, especially towards evening. This I have frequently observed at all large stations, where the whole kites of the neighbourhood, before retiring to roost, appear to hold conclave. They are said to leave Calcutta almost entirely for three or four months during the rains. I have not noticed this at other places. As remarked by Buchanan Hamilton, they may often be seen seated on the entablatures of buildings, with their breast to the wall, and wings spread out, exactly as represented in Egyptian monuments.

The Kite breeds from January to April, beginning to couple about Christmas, and great is the squealing going on at this time, *more felino*. Their cry is a prolonged tremulous squeal, whence the Indian name Chil (Cheel). The nest is made of sticks, often lined with rags, and placed on trees, or on houses and other high buildings, more rarely on rocks; and the eggs, two or three in number, are generally dirty or greenish white, with or without a few pale brownish or rusty blotches.

Besides *M. ater* of Europe, and *M. melanotis* of China and Japan, already alluded to, other kites allied to *Govinda* are *M. affinis* of Australia, and *M. parasiticus* of Africa. *M. regalis* of Europe is of a somewhat different type. Mr. Blyth informs me this last species formerly performed the office of scavenger in London and other cities of Europe (and was protected by law), as indeed *M. ater* does now at Constantinople and in Egypt, &c.

Gen. PERNIS, Cuvier.

Char.—Bill rather small, gently curving from the base, the tip very slightly hooked; margin of the upper mandible almost straight, or very feebly sinuated; nostrils narrow, oblique; the lores covered with small scale-like feathers; wings moderate, 4th quill longest, the 2nd to the 6th sinuate internally; tail rather long, slightly rounded; tarsi short, half plumed in front, covered with small reticulated scales; toes with transverse scales, entire at the roots of the nails, elsewhere divided; lateral toes about equal, free, or barely united to the mid-toe; nails unequal, only moderately curved; middle claw dilated internally.

The Honey Buzzards form a very strongly-marked type, whose most distinctive characters are the well-feathered lores and short reticulate tarsi; they are birds of large size, and only two species are well ascertained, both from the old world. They feed on honey and insects chiefly.

57. **Pernis cristata,** CUVIER.

BLYTH, Cat. 82—JERDON, Cat. 18—HORSF., Cat. 74—P. Elliotti, JAMESON,—JERDON, Cat. 19—P. maculosa, LESSON—P. bharatensis, HODGSON—T. ptilorhyncus, TEM., Pl. col. 4—*Shahutela*, H.—*Madhava* in Nepal—*Tenu gedda*, Tel.—*Ten prandu*, Tam.—*Jen alawa*, Can.—*Jutalu*, of the Yerklees. *Malsuwari* of the Mharis; all these names having reference to honey.

THE CRESTED HONEY BUZZARD.

Descr.—Young bird brown above, the feathers more or less edged with lighter; head and neck usually paler, sometimes rufous brown, at other times whitish, with central dark streaks, more or less developed; beneath white, sometimes only faintly streaked, at times with large streaks, more rarely with large oval brown drops, and with or without a central dark chin stripe and two lateral ones.

In some birds, especially those from Southern India, there is a well-marked occipital crest of several graduated feathers, generally deep brown, or almost black. This crest is seldom more than rudimental in birds from the neighbourhood of Calcutta.

In a further stage the brown above becomes darker and more uniform, and the lower parts assume a pale rufous brown tinge, with the central streak more or less developed, according as it was in the young bird, and the incomplete tail bands are more clouded. The adult has the plumage above rich brown, the head and lores generally, but not always, suffused with ashy grey, and the lower parts uniform darkish brown, with the dark streak almost obliterated; the tail is brownish ashy, faintly clouded with dusky, and with two wide dark black bars, and a third, almost concealed, by the upper tail coverts; the terminal bar is tipped white or grayish.

In most birds in a transition state the feathers of the lower parts are banded brown and white, especially on the lower abdomen, thigh coverts, &c., and some of these feathers are generally to be found at all ages.

Length, male, 23 to 24 inches; wing $16\frac{1}{2}$; tail 9. Female, 25 to 26 inches; wing $17\frac{1}{2}$ to 18; tail 10 to 12 inches; tarsus $1\frac{1}{2}$ to $1\frac{3}{4}$; mid-toe and claw 3. Bill at gape $1\frac{1}{2}$; extent $4\frac{1}{2}$ feet; weight 2lb. 10oz.

The wings reach to about 3 inches from the end of the tail. The gape is short, only reaching to the anterior part of the eye.

I was at one time under the impression that there were two species of honey buzzard found in India, and that the *P. Elliotti*, named after specimens sent home by Mr. Walter Elliot, was well founded. Examination of a large series of specimens now leads me to conclude, with Mr. Blyth, that they are all referable to one species; but I am still inclined to think that specimens from Southern India are somewhat different in their mode of coloration, and perhaps smaller slightly than those from the North. Of course, the white color of the lower plumage, one of the distinctive characters mentioned by Mr. Elliot, in a note to my Catalogue of Birds, is simply a mark of nonage.

The honey buzzard is found throughout India in forests and well-wooded districts, from the level of the sea to the height of 8,000 feet. It extends through Burmah to Malayana, feeding by preference, like its sole congener in Europe, on honey, and the

young of bees and wasps, but it will also eat caterpillars, ants, and any other insects, and occasionally rats and reptiles, and, it is said by the natives, the eggs and young of other birds. The European species has been seen near ponds in search of dragon-flies and other aquatic insects. Its thickly-feathered lores must be a great defence against the stings of wasps and bees when their nest is being plundered. Burgess mentions his having been told by some natives that when about to feed on a comb, these birds spread their tail, and with it drive off the bees before attacking it. I have two or three times seen them find a honey-comb and attack it, but in these cases they certainly despised those introductory ceremonies.

The flight of the honey buzzard is in general very direct, and not very rapid, and it does not usually take long flights. I have seen it on one occasion flying more rapidly than usual over a wood, every now and then attempting to hover, which, however, it did in a very clumsy manner, with its wings much turned upwards. It breeds on trees. The egg of one I obtained, ready for expulsion, was white, with very numerous rusty red spots.

This and the European honey buzzard appear to be the only representatives of the genus. Lesson describes two or three other species, but they are probably all phases of plumage of our Indian bird.

Gen. BAZA, Hodgson,

Syn. *Lophotes*, Lesson.—*Lepidogenys*, Gray. *Hyptiopus*, Hadgs.

Char.—Bill small, deep, broadish at the base, moderately hooked at tip, grooved on the sides, upper mandible with two sharp teeth on each side, near the tip; lower mandible with three or four small teeth; orbits and lores thickly feathered; nostrils transverse, very narrow; wings moderate, the 3rd quill longest, the first three slightly emarginate towards the tip; the tail square, rather short; tarsus short, thick, plumed above, with smooth hexagonal reticulated scales below; the toes rather short, with strong scuta above; the laterals nearly equal, or the outer rather shorter if anything; both toes slightly joined to the middle toe; talons small, almost subequal, tolerably curved; head crested; size small.

Its crested head, the narrow nostrils, clothed lores, and even the form of the bill, ally this curious form to *Pernis*.

58. **Baza lophotes**, Cuv.

Falco, apud Cuvier, and Tem., Pl. col. 10—Blyth, Cat. 80—Horsf., Cat. 72—Jerdon, 2nd Suppl. Cat. 15 bis—F. Lathami, Gray—Buteo cristatus, Vieillot—Lophotes Indicus, Lesson and Swains.—Baza syama, Hodgson—*Syama* in Nepal *Kohi* of Parbutties.

The Crested Black Kite.

Descr.—Plumage above, with the fine long slender drooping crest, thigh coverts, under tail coverts, and under wing coverts, glossy green black; outer webs of the secondaries deep chestnut; outer webs of the tertiaries white; scapulars and some of the coverts next them white internally, tipped chestnut, forming a conspicuous interrupted white wing band; beneath white, with five or six broad bars of deep chestnut on the sides of abdomen; wings and tail beneath, pale plumbeous, without any bars.

Bill and legs plumbeous: irides dark brown. Length 13 to 14 inches; extent 30; wing 9; tail 5. Tarsus $1\frac{1}{2}$; mid-toe and claw $1\frac{1}{2}$; weight 8 oz.

Hodgson states that young birds have the teeth of the bill not well marked, only a festoon, and that the feet are fleshy grey.

This very handsomely-plumaged kite is found, though sparingly, spread through India, and certainly very rare towards the south. I shot one specimen on the eastern coast, near Nellore. It is occasionally killed at Calcutta, and is more frequently met with in the lower Himalayas. It is almost entirely insectivorous in its habits, and keeps to the forests or to well-wooded districts. It takes only short flights, and certainly is not usually seen soaring high in the air, as Mr. Gray says in his *Genera of Birds*. It has the power of erecting its crest quite vertically.

A second species of this peculiar genus exists in the bird named *Lophastur Jerdoni* by Blyth, from Malayana and the Isles,

which, however, was previously named *Astur (Lophotes,) Reinwardtii;* and the Australian *Lepidogenys subcristatus* of Gould is also very closely allied to it, if indeed distinct.

The genus *Aviceda* of Swainson is very close to this, and is united to it by Bonaparte. It is an African type.

Gen. Elanus, Savigny.

Char.—Bill very small, wide at the base, compressed at the tip, the tip much hooked and lengthened; edge of upper mandible slightly sinuated; cere short; nostrils large, oval, longitudinal; wings very long, pointed, 2nd quill longest, the 1st emarginate near the tip; tail short, almost even, or emarginate. Tarsi short, thick, weak, plumed above, covered with reticulated very small roundish scales beneath; toes thick, soft, free, unequal; outer toe shorter than the inner one; claws rather large, middle one keeled, others rounded.

Horsfield places this genus among the Harriers, which it resembles in colors, but its short tarsi and general structure are quite typical of the true kites. It is the only genus of this sub-family which is cosmopolite.

59. **Elanus melanopterus**, Daud.

Falco apud Daudin—F. cœsius, Savigny—Le Vaill, Ois. d' Afrique, pl. 36—Hodgson, Madras Journal, XVI.—E. minor, Bonap.—Blyth, Cat. 84—Horsf., Cat. 35—Jerd., Cat 15—*Kapasi*, H.—*Chanwa*, in Nepal—*Argellur* of the Yerklees—*Adavi Ramadasu*, Tel., *i. e.* Jungle tern.

The Black-winged Kite.

Descr.—Whole upper parts fine grey, paling on the tail; lores, and narrow supercilium black; shoulders, winglet, and lesser wing coverts, deep glossy black; lower parts white, extending to the forehead and ear coverts, and shaded with pearly grey on the flanks and the sides of neck.

Length 13 inches; wing 11; ext. 33; tail 5; tarsus $1\frac{1}{4}$; mid-toe and claw $1\frac{3}{8}$; bill at gape $1\frac{1}{10}$. Weight 7 to 8oz. Irides crimson; legs deep yellow.

The wings reach beyond the end of the tail.

The young bird has the upper plumage light ashy, mixed with brown, the feathers broadly edged whitish, and the under parts sullied white.

This species of *Elanus* is found throughout India, and probably other parts of Asia, also over a great part of Africa, straggling occasionally to the South of Europe. Prince Bonaparte, indeed, separates the Indian race, saying that it is considerably smaller than the African one, but this opinion is not confirmed by other ornithologists.

It occurs in India most commonly in well-wooded, cultivated districts, and in thin jungle, or the skirts of the forests, avoiding alike bare plains and the depth of the jungles. It is not very much on the wing, nor does it soar to any height; but either watches for insects from its perch on a tree, or any elevated situation, or takes a short circuit over grain fields, long grass, or thin jungle, often hovering in the air like a kestril, and pounces down on its prey, which is chiefly insects, but also mice and rats, and probably young or feeble birds. I once shot one devouring the carcase of a dove, but it appeared to have been dead for some time, and was probably not killed by the *Elanus*. It breeds on trees from December to March, and lays two or three white eggs.

Another species of *Elanus* is found in Celebes, two in Australia, and one in America.

Other genera of Kites are *Nauclerus*, the type of which, *N. furcatus*, is found in America, and has been before alluded to as the only other fork-tailed bird of prey besides the Kite (*Milvus*). The only other species, which is African, differs somewhat in its structure, and has been named *Chelidopteryx* by Kaup. *Rostramus* and *Cymindis* are American forms of small size, with very hooked bills, and feed on insects and frogs. *Gampsonyx* is also American; it is very close to *Elanus*. *Ictinia* is a somewhat stronger form, with the tail emarginate, and decidedly fishing propensities, and, like *Haliastur*, is said not to refuse carrion or garbage.

Fam. STRIGIDÆ.

Head large, densely feathered; eyes surrounded with a circle of radiating feathers, forming the facial disk, which is bounded in some by a ruff of close-set feathers; eyes large, directed forwards; bill short, usually covered by recumbent setæ; ears large; feet usually feathered to the toes, outer toe reversible, generally shorter than the inner one.

The Owls form a very natural family, any member of which is easily recognisable at once by its peculiar external appearance. The large head and eye, the facial disk, the forward setting of the eye, the soft plumage, and the beautifully blended unobtrusive colours, at once distinguish an Owl. They may be said to approach, on the one side, the Harriers, which have large ears, a ruff, and a noiseless flight; and on the other side, have some affinity with the Parrots, by means of the remarkable Australian genus *Strigops*, which has the facial disk and lengthened bristles of an Owl; and if its plumage were brown and sombre, might, with great ease, be overlooked for one. The ears are usually of large size, sometimes very large, and often furnished with an operculum or lid, and hence the Owls possess a most delicate perception of hearing, whilst their soft downy feathers give to them a light, buoyant, and noiseless flight. Many of them possess a large double crest, or tuft of lengthened feathers above the eyes, popularly called horns or ears, and named by naturalists aigrettes, or ear tufts, or frontal tufts. The wing-feathers have the webs with the plumules disunited at the tips, and very pliable, causing the outer edge of the quills to appear serrated, thus allowing a free passage to the air, and at the same time the length and proportion of the quills enables them to sustain flight well. The eyes are fixed in the orbits in such a way as to look directly forwards, and this gives them that peculiar stare so familiar to all. They are usually large, and their vision is very acute by night; but from the great size of the pupil, which allows so much light to enter the eye, they are dazzled in a bright light, and see very badly.

The bill is somewhat short, generally well curved and hooked at the tip, and the base always concealed by long projecting

bristles, which are part of the facial disk; the upper mandible is usually entire, and the lower one sometimes notched; the nostrils are generally situated in the anterior part of the cere. The feet are well formed for grasping, the outer toe being versatile, and the claws are generally strong and sharp, and the hind toe very short.

The skull of the nocturnal *Raptores* is short, but high vertically, and the furrows are very distinct. The bony plates of the eye are very strong and thick, extending over a large surface of the eye; but Owls do not possess the superciliary ridge which forms the projecting eyebrow in most of the *Falconidæ*. The external ears are furnished with a large crescentic membranous flap or valve. The sternum is smaller than in *Falconidæ*, short, somewhat convex, and the keel less developed; and the posterior margin has two fissures or emarginations on each side in most, or one shallow cleft in a few. The furcula is thin beneath, and sometimes even membranous. The mouth is wide, the œsophagus large and without any dilatation, the stomach more muscular than in the *Falconidæ*; the intestines are long, and there are two enormous cæca, usually dilated at their extremity. Their lungs are largely developed, as are the air cells, and the bones are highly pneumatic, especially the bones of the head, which contain large cavities communicating with the ears.

Owls feed either by twilight or during the night, and live on small mammalia, especially mice, rats, and shrews, also on birds, which they sometimes surprize when sleeping, various reptiles, fishes, and insects. The indigestible portion of their food, as hair, bones, scales, &c., are formed into pellets in the stomach, and disgorged.

They are mostly arboreal, some of them roosting in holes in rocks or buildings. Their eggs, which they lay in holes in trees or buildings, are always white, and of a rounded form. The female is a little larger than the male, but does not otherwise differ. Most Owls have loud voices, and their names, in many languages, are derived from their calls, howling, hooting, or screeching. Many species are looked on with awe and superstition by the uneducated in all countries, and their unearthly

screeches and hootings, heard during the dead of the night, may well excuse some little dread of them among ignorant, uncivilized races of mankind.

Linnæus knew only twelve species of Owls, which he included in one genus. A much larger number of species are now known, and they are divided by most ornithologists into several sub-families. In the following pages I nearly follow the classification adopted in Horsfield's Catalogue. Gray and Blyth do not adopt the family *Asioninæ*, the members of which are included by Gray in the *Syrniinæ*, and by Blyth in the *Buboninæ;* and I may remark that this uncertainty of their real position, perhaps, points out the correctness of assigning to them a distinct family rank, as Vigors and Horsfield have done. India possesses representatives of all these families.

Sub-Fam. STRIGINÆ.

Head very large, disk complete, occupying the whole face; ear-conch very large, ears operculated; wings long; tail short; tarsus long, more or less plumed; toes reticulated, with one or two scuta at the root of the claws.

The typical Owls, of which the common Barn Owl of Europe, *Strix flammea*, is the best known example, are birds of moderate size, with enormous heads, not furnished with egrets, rather small eyes, the irides of which are dark, a complete disk, long wings and legs, and a short tail. They are truly nocturnal in their habits, and have a most unearthly screech; hence often called Screech-owls. We have three representatives of this family in India, and others are found all over the world.

Gen. STRIX, Linnæus (in part).

Char.—Bill rather long, straightish at base, curved at the tip, somewhat shallow and feeble, with large nasal fossæ, and long lunated nostrils; operculum somewhat tetragonal; wings reaching beyond the end of the tail, which is short, and nearly even, or slightly rounded; 2nd quill longest, 1st, nearly equal to it, 3rd, only a little shorter; tarsi long and slender, rather scantily feathered; toes moderate, scutellate above, slender, nails sub-equal,

large, well-curved, middle one pectinated; outer toe shorter than the inner, united to the middle one by a membrane, and reversible.

60. Strix Javanica, De Wurmb.

Sykes, Cat. 19—Jerdon, Cat. 37—Horsfield, Cat. 98—S. flammea, apud Blyth, Cat. 171—S. delicatula, Gould, (fid. Kaup,) *Karaya* and *Karail*, H., also *Buri churi*, *i. e.*, the bad bird. —*Chaao pitta*, Tel., and *Chaao kuravi*, Tam; both meaning death bird.

The Indian Screech-Owl.

Descr.—Above, pale yellow buff, beautifully mottled with light grey, each feather tipped with a white spot, edged darker; quills and tail darker, and somewhat fulvous, with distinct mottled bands, and specks between them; disk white, with a patch of rufous at the inner corner of the eye; ruff yellow and brown; all beneath, including the under wing coverts, white in some, pale yellowish buff in others (query in the female?); the feathers of the breast and abdomen with small black specks or spots.

Length 13 to 14 inches; wing 11; tail $2\frac{1}{2}$; tarsus $2\frac{1}{2}$ to $2\frac{3}{4}$, half plumed, the bare portion and toes covered with hair; mid-toe and claw $2\frac{1}{4}$; the wings reach $1\frac{1}{2}$ inches beyond the tail.

The Indian Screech-owl is found throughout India and Ceylon,* extending through Burmah to Malayana. This species was for some time considered the same as the European Barn Owl, but differs somewhat by being larger, with more robust feet and toes, and in being more spotted beneath. If Gould's Owl from Australia be identical with it, as Kaup asserts, and, as a comparison with Gould's figure, Birds Aust. 1 Pl. 31, appears to confirm, its range is then much extended. Sometimes it takes up its quarters in a grove of old trees, in the holes of which it roosts during the day; at other times it lives in deserted buidings, tombs, pagodas, mosques, &c., and I have often found them in the solitary cells and powder magazines, which are generally situate at a little distance from the busy part of a Cantonment.

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* In my account of the diurnal *Raptores* I omitted stating specially which species extended to Ceylon. This I shall in future always do, and at the end of the work will supply the omission as regards the previously noticed birds.

It hunts entirely by night, not coming forth till it is quite dark, and lives on rats, mice, shrews, &c. More than once one has flown into the room in which I was sitting with open doors and windows, after a rat that had entered. It breeds both in holes in trees and buildings.

The next species has been placed in a separate division, sub-gen. *Scelostrix*, Kaup, *Glaux* Blyth. It differs by the tarsus being very long and even more nude than in the last; and the wings also being longer.

61. **Strix candida**, Tickell.

Jerdon, Ill. Ind. Orn. Pl. 30—S. longimembris, Jerdon, Cat. 38—Glaux javanica, apud Blyth, Cat. 173. S. Capensis, Horsf., Cat. 97.

The Grass Owl.

Descr.—Above, tawny yellow, the feathers all broadly ended with brown, and a white spot at the tip; or brown, with a white terminal spot, and yellow at the base; quills fulvous yellow, with distinct brown bars; tail pale yellow, with four dark brown bars, the terminal one mottled at the ending; disk whitish, or fulvous white, with a dark brown spot at the inner angle of the eye; ruff dark fulvous; beneath, yellowish white, with small brown specks; irides very dark brown; bill horny; legs livid.

Length 14 inches; wing 14; tail $4\frac{1}{2}$; tarsus, $3\frac{1}{2}$; mid toe and claw, $2\frac{1}{8}$. Tarsus and toes with a few scattered bristles, scarcely plumed at the knee. The wings reach three inches beyond tail; the claws are blunter and less curved than in the last.

The Grass Owl is found throughout the greater part of India, but thinly scattered, and by no means plentiful. I first procured it on the grassy side of a hill on the Neilgherries, at about 6000 feet of elevation. I afterwards obtained it in the Carnatic, and in Central India, and it was procured by Tickell in the same district, and probably occurs also in the N. W. Provinces, for Mr. Phillips P. Z. S., under the name of *Strix javanica*, mentions its living in long grass, and to be found in abundance some miles from Hodal.

Tickell, too, mentions its being found throughout Bengal and the Upper Provinces.

Our species does, indeed, live almost exclusively in long grass not frequenting jungles, nor coming near the haunts of man, like the last. It is probably not rare in some localities, for on the occasion of the long grass and reeds in the dry bed of a large tank near Nellore being fired to drive out some wild pigs, I saw at least twenty of these Owls. It in general rises heavily, and flies only a short distance, when it drops down suddenly into the grass. Mr. Phillips mentions that it may be sometimes put up and chased by hawks. I presume he means by trained falcons, for I have heard that a favorite quarry for hawking in the Punjab is a grass owl which gives an excellent and long chase. It must be remembered, however, that *Otus brachyotus* frequents similar localities, and may be the one alluded to rather than this one.

Kaup gives *Strix capensis*, Smith, S. A. Z. Pl. 45 from S. Africa, as synonymous with our Indian bird, but on comparing Smith's plate, there appear some differences in color, and the wings and legs appear to be shorter than in the Indian bird. It is probably also Horsfield's *S. capensis*, from a drawing of Buchanan Hamilton's.

Gen. Phodilus, Is. Geoffroy.

Char.—Wing rather short, much rounded, reaching to the end of tail; 1st quill only equal to the 10th; tarsus well feathered; inner toe longer than the centre one; outer toe reversible; disk not quite so marked above as in *Strix*, but otherwise similar.

62. **Phodilus badius**, Horsf.

Strix, apud Horsf., L. T. XIII.—Horsf., Zool. Res. Java., Pl. 36—Blyth, Cat. 169—Horsf., Cat. 96.

The Bay Screech-Owl.

Descr.—Above, bright chestnut, unspotted on the head; feathers of the back and wings with a small black spot, to which is added a white shaft; white spots on the scapulars, and greater wing coverts, and some of the tertiaries; sides of the neck and scapulars externally bright buff, with black spots; disk fulvous white, with a dark

band half round the eye internally, and a paler fulvous patch externally; beneath, pale fulvous yellow, with minute black spots; tarsus and under tail coverts the same, but unspotted.

Length, 11 inches; wing $8\frac{1}{2}$; tail $3\frac{1}{2}$; tarsus, 2; mid-toe and claw $1\frac{2}{3}$. The toes are almost bare; and the wings reach just to the end of the tail.

This peculiarly colored owl has been very rarely found within our province, having only been obtained by Mr. Hodgson, in Nepal and Sikim. It appears to be more common in Burmah and Malayana, especially in the Archipelago. It is said by the natives to be on good terms with the tiger.

Sub-fam. SYRNIINÆ—Hooting Owls.

Head not so large as in the last family, and the disk incomplete above; no ear tufts; wings moderate, somewhat rounded; the first four or five quills emarginate; tarsus short, stout, well feathered; mid-toe longer than the inner toe; claw dilated internally, as are the toes also partially; tail slightly lengthened, and rounded or graduated.

The Hooting Owls are birds of rather large size, with smooth rounded heads, dark irides, stout legs and feet, and generally adorned with very prettily marked plumage. They are quite nocturnal in their habits, and live in woods and groves. The ears are moderately large, somewhat lunate or ovoid, and operculate.

Gen. SYRNIUM, Savigny.

Syn. *Ulula*, and *Aluco*, Cuvier, *Scotiaptex*, Swainson.

Char.—Those of the family. This genus has been sub-divided into several groups or sub-genera, which, though not marked by any striking structural differences, are yet sufficiently natural divisions, marked by similarity of color, and some points of structure; and I will indicate them here, without, however, adopting them as genera.

Sub-gen. BULACA, Hodgson.

Bill somewhat elongated, nearly straight at base, or gently sloping from base, compressed at the tip, strong; nostrils transverse,

oblique, elliptic, and tumid; first six quills emarginate and serrate; toes feathered.

63. **Syrnium indranee**, Sykes.

Strix, apud Sykes, Cat. 20—Blyth, Cat. 164—Horsf., Cat. 101—Gray, Ill. Gen. of Birds, Pl. 14—B. monticola, Jerdon, Suppl. Cat. 42 bis.

The Brown Wood Owl.

Descr.—Above, hair brown, darkest on the head and neck, the greater coverts, scapulars, and tertiaries, banded with white, the outer scapulars being almost white with brown bars; rump and upper tail coverts, also faintly barred with fulvous; quills brown, barred with pale fulvous on both webs, and with narrow whitish bars, and a white tip; disk, black round the eye, with a pale whitish upper edge or supercilium, rufous externally; ruff brown, with some white markings; throat below the ruff white; beneath, pale fulvous white, narrowly and closely barred with brown; quills and tail beneath dusky brown, with white bars; bill pale greenish; irides deep brown; claws horny reddish.

Length 19 to 21 inches, wing, 13 to 14; tail 8 to 9; tarsus not $2\frac{1}{2}$; mid toe and claw, $2\frac{1}{2}$; toes feathered three quarters of their length, with strong scuta beyond. The inner claw is the largest, the outer one about equal to the hind claw. The wings reach nearly to the end of tail.

A specimen from Goomsoor has the disk mottled white and brown, the bristles, pointing to the base of the bill, being grizzled black.

This species, first described by Sykes, has generally been considered the same as Hodgson's *Bulaca newarensis* from Nepal; but it is considerably smaller, and differs otherwise, as will be pointed out when noticing that bird.

The Brown Wood Owl is found throughout Southern India, in Ceylon, and the Malayan peninsula; but has not yet been procured in Burmah. It frequents the forest only, and is most common at a considerable elevation. Col. Sykes found it in the dense woods of the ghâts. I procured it first on the Neilgherries, and afterwards

along the Western ghâts in the Wynaad and Coorg. It has also been sent from Goomsoor. It is quite nocturual in its habits, and, according to Layard, utters the most doleful cries. Specimens from Malacca have the disk more rufous than those from S. India, but are of the same size, and otherwise not distinguishable, I think.

64. **Syrnium newarense**, Hodgson.

Blyth, Cat. 164 (in part)—Horsf. Cat. 101, (in part)—*Newar* of the Nepalese.

The Nepal Brown Wood Owl.

Descr.—Upper parts rich brown; the quills and tail feathers with bars of whity brown; beneath, pale rusty, with numerous narrow brown bands; inner scapulars the same; throat, white. Very similar to the last, but much larger and stouter in all its proportions; the scapulars are less banded, and the brown bars on the lower surface tend to coalesce and form a pectoral band; the disk is black all round the eye, whitish externally, and grizzled on the anterior bristles; the wings are nearly three inches shorter than the tail, and the toes are more feathered than in the last; bill, greenish horny; irides dark brown.

Length 2 feet, wing 18 inches; ext. 50; tail, $9\frac{3}{4}$; tarsus $2\frac{3}{4}$; mid-toe and claw, $3\frac{3}{4}$; weight $2\frac{1}{3}$lbs.

The very great difference in size of the Himalayan birds, which must weigh fully double the bird from Southern India, together with the points above noticed, have induced me to consider this species as distinct from *Indrani*, and though Mr. Blyth, in his Catalogue, has joined them, yet I see that in his prospectus of Indian Ornithology (of which it is to be regretted so little was published) he says, that he strongly suspects that there are two races of this bird, one of larger size, peculiar to the Himalayas, the other alike in Central and Southern India, Ceylon, and the Malayan peninsula.

Mr. Hodgson states that they tenant the interior of woods, and never approach houses, and that they are most common in the

central region of Nepal, *i. e.* the moderately elevated parts of the hills. It extends to the North-western Himalayas.

The sub-gen. CICCABA, Kaup, has the ear orifice smaller; bill more feeble; wings not so strongly emarginate; toes longer, less plumed.

65. Syrnium sinense, LATH.

Strix, apud LATHAM—BLYTH, Cat. 165—HORSF., Cat. 100—JERDON, Cat. 42—GRAY and HARDW., Ill. Ind. Zool. I. Pl. 21—S. orientalis, Shaw.

THE MOTTLED WOOD OWL.

Descr.—General plumage above, rich tawny yellow, the feathers of the head and nape spotted with black and white, each plume having a blackish tip, and crossed by an interrupted white band; feathers of the back, scapulars, wing coverts, and upper tail coverts, beautifully mottled and speckled with dusky and white; quills tawny at their base, dusky at the tip, with pale mottled bands externally; inner webs tawny with brown bands; tail much the same, the mottled bars on both webs of the centre tail feathers, on the outer web and tip only of the others; disk mottled white, brown, and fulvous; the ruff dark brown; beneath, the chin whitish, the rest of the body beautifully banded white and brown, each feather being white, with numerous narrow bars of brown; tarsal feathers the same; the toes clad nearly to the end. Some specimens are much tinted with fulvous beneath.

Bill, black; eyelids, orange; irides, dark brown; claws, dusky; soles of the feet, yellowish. Length, 18 to 19 inches; wing, 14¼ to 15; tail, 8; tarsus 2¼; mid-toe 2½. The wings reach just to the end of the tail.

This very beautifully plumaged Owl is found throughout the greater part of India, but has not yet been found in Ceylon or Burmah; nor are we aware of its extending to China, as its name implies. It is only found in well-wooded districts at no great elevation. I have found it most numerous in the Carnatic, and in parts of Mysore, frequenting groves of trees and avenues, rare

in Central India, and the forests of Malabar, and not found in Lower Bengal. It has a loud, harsh, dissonant hoot. Its plumage is very beautiful, but it is surpassed by that of its near affine, *S. seloputo*, of Burmah and Malayana. Another allied species is *S. leptogrammica*, Tem., from Borneo.

The sub-gen. SYRNIUM, Kaup, has the bill, feeble; ear orifice middling; opercule large; toes thickly feathered, short; wings rather short.

66. **Syrnium nivicolum**, HODGSON.

J. A. S. XIV., 185, BLYTH, Cat. 168—HORSF., Cat. 103—*Kashiop takpum*, Lepch—*Uko*, Bhot.

THE HIMALAYAN WOOD OWL.

Descr.—Above, mottled dark brown and fulvous, and in parts mottled with white; a white band on the outer side of the scapulars, and some of the greater wing coverts also white spotted; quills brown, with whitish interrupted bands; tail brown, with eight or nine light brown bands, marbled towards the tip; sides of the neck, and eyebrows also, with a good deal of white; chin whitish; disk greyish, mottled brown, and dark round the eye; ruff with some brown markings; lower parts beautifully mottled with brown, white, and fulvous bars and lines; tarsal feathers narrowly barred brown, and the toes feathered nearly to the tips. Some young birds are very rufous, mottled brown and rufous, with the bars on the wings pale fulvous, and those on the tail mottled fulvous; disk rufous brown, whitish above the eye, and grizzled in front.

Length, 16 to 17 inches; wing, 11 to $12\frac{1}{2}$; tail, 7 to $7\frac{1}{2}$; tarsus, 2; mid-toe and claw, 2. The wings do not reach to the end of tail by about $1\frac{1}{2}$ inches.

This Wood Owl from the Himalayas is very closely allied to the *S. aluco* of Europe, but has been placed as distinct by most ornithologists. It differs in being slightly larger, generally of darker hue, and the cross-bands more marked. In the European species the female is said generally to be much more rufous than the male.

The Himalayan Wood Owl has only been found in the higher regions of the Himalayas, not descending below 7,000 feet; and found, according to Hodgson, up to the snowy region. Its congener in Europe, *S. aluco*, resides in thick woods, nestles in holes of trees, and is celebrated for its loud, hooting calls.

To this sub-family belong *S. cinerea* of Europe, *S. nebulosa* of North-America, and *S. uralense* of Pallas, from Northern Europe and Asia, forming the genus *Ptynx* of Blyth; and there are others from Africa and America.

Sub-fam. ASIONINÆ, Vigors.

Syn. *Otinæ*, apud Gray.

Head large, with two aigrettes, or plumes of lengthened feathers, on each side of the forehead; orifice of the ears large, lunate, operculate; wings long, second quill longest, and third quill sub-equal to it; tail moderate, or longish, nearly even; facial disk nearly perfect; bill short, strong, curved from the base; upper mandible sometimes festooned, well protected by bristles; tarsus stout, moderate, or short, feathered, as are the toes as far as the scales in front of the nails, which are sub-equal.

This family chiefly differs from the last in the horns or tufts of erectile feathers on the forehead, the longer wings, and the very much larger ear, which is enormous and unsymmetric in some species; they are mostly nocturnal in their habits; are of moderate size; and their irides are yellow.

Gen. OTUS, Cuvier.

Syn. *Asio*, Strickland and Blyth. *Brachyotus*, Gould.

Char.—Same as those of the sub-family.

67. **Otus vulgaris**, FLEMING.

HORSF., Cat. 93—Asio otus, apud BLYTH, Cat. 145—GOULD, Birds of Europe, Pl. 39.

THE LONG-EARED OWL.

Descr.—Above, the forehead finely mottled dusky and tawny; the ear tufts about $1\frac{3}{4}$ inches long, deep brown, edged with tawny;

the disk pale tawny, with a narrow black stripe along the inner side of the eye; the ruff blackish; the head and neck and breast dark brown, the feathers edged tawny yellow, broadly so on the neck and upper part of the breast; rest of the plumage above brown, mottled whitish, the feathers tawny at the base; the quills tawny, with a few dark brown bars changing to mottled fulvous white, and dusky towards the tip; tail pale tawny, with brown bands, mottled at the tip; beneath, from the breast, tawny with dark brown dashes, and a few cross stripes; vent, and under tail coverts, and tarsal feathers, unmarked.

Length of one 14 inches; wing, $11\frac{3}{4}$; tail, 6; tars., $1\frac{5}{8}$ to $1\frac{3}{4}$; the closed wings are longer than the tail.

The Long-eared Owl of Europe has only been found in the Himalayas from Nepal to Cashmere, and but rarely ; more common perhaps towards Afghanistan. In Europe it chiefly frequents fir woods, and generally breeds, it is said, in old nests of other birds. It feeds on mice, moles, and beetles.

The sub-gen. *Brachyotus*, Gould and Kaup, has the ear tufts small.

68. **Otus brachyotus**, Gmel.

Strix, apud Gmelin—Horsf., Cat. 94—Jerdon, Cat. 39—Asio, apud Blyth, Cat. 146—Brachyotus palustris, Gould, Birds of Europe, pl. 40—*Chota Ghughu*, Hind.—*Chinna gudla guba*, Tel.

THE SHORT-EARED OWL.

Descr.—Above, head and neck brown, the feathers broadly margined with pale tawny; wings and back the same, but more tawny on the scapulars and back, and the brown more irregular, tending to become narrow in parts, and to extend into bars in other parts; quills deep tawny, with broad brown bars; tail light fulvous, also brown banded, and light tipped; the disk pale fulvous, much streaked blackish; the ruff mottled tawny and brown; beneath, pale fulvous, with narrow long stripes, wide on the throat and breast; the under tail coverts, and the tarsal plumes, unspotted. Bill, blackish; irides, yellow.

Length, 14 to 15 inches; wing, 13; tail 5 ; tarsus, 1¾ ; the closed wings exceed the tail.

The Short-eared Owl is found, with hardly any variation, over all the Old World, and great part of North America. In India it is almost exclusively found in long grass, and in beating for florikin many are always flushed; one now and then paying the penalty of keeping company with such a game bird by falling to the gun of some tyro. It is migratory in India, coming in at the beginning of the cold weather, and leaving about March. It hunts chiefly by night, though it flies well by day; and it is probably the Owl that is not unfrequently hawked at by falconers in the North West, as mentioned under the head of *Strix candida*, p. 119. It is said to breed on the ground. Its voice is a double or treble hoot, not unlike, says Pallas, the call of the Hoopoe. Several allied species of *Otus* are found in America, and one or two in Africa.

Sub-fam. BUBONINÆ, Vigors.

Head moderate, furnished with two long ear tufts on the forehead; orifice of the ears rather small, or moderate, without an operculum; wings moderate, or longish; tarsus stout, usually feathered; toes and nails strong.

This family includes the great horned owls, or Eagle owls, and also the small Scops owls. The bill is usually strong, and the legs and feet thick and powerful, with large talons. Some of them are partially diurnal in their habits, and most of them have yellow irides.

Gen. URRUA, Hodgson.

Syn. *Bubo*, Auct. *Ascalaphia*, Is. Geoffr.?

Char.—Bill slightly lengthened, scarcely arched from the base, compressed, strong, black; nostrils ovoid, transverse; wings long, 3rd quill longest, and 4th quill sub-equal to it; tail rather long, nearly even; tarsi and toes feathered; tarsus moderate, moderately strong; toes strong, and the claws sub-equal.

This genus is usually joined to the next, and both are placed under *Bubo*, but erroneously so, in my opinion, and I have adopte

Hodgson's characters with some slight alterations. Kaup allots Hodgson's genus *Urrua* to the next two birds, *viz.*, 70 and 71, but *B. bengalensis* was the type of this genus, whilst *Huhua* had *Nepalensis* for its type. Kaup, keep *Bubo* for the present bird, as well as for the great horned Owl of Europe, in which I have not followed him, but adopt *Urrua*. In this, I think, I am confirmed by finding that *Bubo ascalaphus*, so close to our species, is made into a distinct genus, *Ascalaphia*, Is Geoffr., adopted by Bonaparte, which, if identical, has the priority. It is a much less powerful and less rapacious bird than either of the two next, is more diurnal in its habits, and has orange yellow irides. In this point, indeed, it agrees with *Bubo maximus*, which, however, is a much larger and more robust form, and has a comparatively shorter and stouter tarsus and toes; the bill, too, is shorter and stronger, and its ears are much smaller than in *Urrua*. Its style of coloring, however, is much that of our *Bengalensis*.

69. Urrua Bengalensis, Franklin.

Otus, apud Franklin, P. Z. S. 1831—Sykes, Cat. 18—Gould, Cent. Him. Birds, Pl. 3—Blyth, Cat. 143—Horsf., Cat. 88—Jerdon, Cat. 43—U. Cavearia, Hodgson—*Ghughu*, H.—*Gubar*, Mahr.—*Hokra Chil*, in the Doon—*Yerra gudla guba*, Tel.—*Kotang*, Tem.

The Rock horned Owl.

Descr.—Above, head and neck bright tawny yellow; the feathers with long and wide streaks of rich dark brown; forehead nearly brown black, with a few narrow pale markings; aigrettes deep brown, edged fulvous; rest of the upper plumage rich deep brown, mottled and barred with fulvous, pale and whitish on the wing coverts and tertiaries; quills rich deep tawny, with brown bars, dusky at the tip; tail tawny, with brown bars and mottlings, centre feathers brown, with pale mottled bars; beneath, whitish on the throat, the rest pale fulvous, the feathers broadly dashed on the breast with dark brown, and on the abdomen, flanks, and thigh feathers (externally,) both streaked and cross-banded; vent [and] tarsal feathers pale fulvous, unmarked, or only slightly barred;

under tail-coverts faintly cross-barred with light brown; disk whitish; eyebrows black; ruff dark blackish, edged fulvous.

Length, 22 inches; wing, 16; tail, 9; tarsus, nearly 3; mid-toe and claw, $2\frac{3}{4}$; bill, not 2; height, 1. The wings reach to the end of the tail; the tertials are only two inches shorter; the inner claw is about equal to the middle one.

This species is exceedingly similar to *B. ascalaphus* of North-East Africa, an accidental visitant to Europe; and it has lately been asserted that it is perhaps identical with that species, but Kaup, Bonaparte, and others, keep it distinct.

The Rock Horned Owl is found throughout India and Ceylon, extending into Affghanistan. It prefers rocky hills, and ravines in open country, and is rare on the Malabar coast, and in Lower Bengal below the tideway. It is often found in holes in the trap hills of the Deccan and other parts; hence the name given by Hodgson: also not unfrequently in old buildings, fort walls, &c. I have killed it on the Neilgherries in dense woods, but it is not so common there as the bare-legged horned Owls. There is not a rocky hill in the Carnatic, nor a ravine in the Deccan, where this Owl may not be seen seated on the summit of a rock, or a ledge, till long after sunrise, and looming large against the clear sky, looking more like a quadruped than a bird. River banks, when partially clad with brùshwood, are also favorite haunts. It hunts of course chiefly at night, and destroys large quantities of rats, also, occasionally, birds, lizards, snakes, crabs, and large insects. Where rocky or broken ground does not occur, it betakes itself to dense groves and gardens.

I have found its nest on a well-shaded ledge on the south side of a ravine, where the light of the sun could not penetrate at that season, *viz.*, March. It lays two or three white eggs. Hodgson says always two, and that it breeds in a hole or burrow, on a bank-side. The cry of this Owl is a loud solemn hoot, likened, by a writer in the India Sporting Review for 1842, to *durgoon, durgoon.*

The same writer says that it bites off the head of large birds, and eats them gradually from the neck to the tail; small birds it eats whole, first biting the tail-feathers off. I had a pair of this

kind alive in my possession for many months. Their usual cry was a long clear hoot, but occasionally, at night, I heard them utter a low indistinct strangling sort of cry. When alarmed they would hiss and snap with their bills, and if a dog approached them they would lower the head almost to the ground, erecting all the feathers of the body, and spreading out their wings to their full extent. These, from the stooping position of the bird, were nearly vertical, their upper edge almost touching the ground, and, from their extent, the bird presented a most formidable front to an intruder.

70. **Urrua Coromanda,** LATHAM.

Strix, apud LATHAM.—U. umbrata, BLYTH, Cat. 144—HORSF., Cat. 89.—GRAY and HARDW., Ill. Ind. Zool., 1. Pl. 20—*Jangli Ghughu, H.; Nella gudla guba*, Tel.

THE DUSKY HORNED-OWL.

Descr.—Plumage above dull sepia-brown, much freckled, especially on the head and hind-neck, which have a narrow dark streak on the centre of each feather; ear-tufts chiefly dark brown; outer scapulars with light spots in the centre webs; wings pale, or somewhat ashy brown, with dark bands; tail with three distinct broad brown bands, on a pale mottled fulvous-brown ground; beneath, pale earthy-brown, with a narrow dark brown streak on the centre of each feather.

Bill, horny-yellowish; irides, orange-yellow. Length, 24 inches; wing, 16; tail, 9; bill at gape, nearly 2; tarsus, 2.

This sombre-plumaged Owl has much of the general form of *Bengalensis*, and the orifice of the ear is about the same size as in that bird, but the talons are more unequal, and sharper, and the outer toe is equal to the inner toe, which is a rare structure in this family.

There is little doubt that this is the *coromanda* of Latham; but the figure in Gray and Hardwicke's Illustrations is so unlike nature, that it was not at first recognised to be the same bird.

The dusky horned-Owl is found throughout the greater part of India, having been obtained in lower Bengal, where not very rare, in the Carnatic in the more wooded parts, and near hills, and in the

lower Himalayas. It frequents thick groves and forest jungle, and is said to kill fish; but it may have been mistaken for *Ketupa Ceylonensis*, which it resembles much in the style of its markings, though of greatly duller tints.

Gen. Huhua, Hodgson.

Syn. *Urrua* apud Kaup; *Bubo*, auct.

Char.—Bill long, straight, suddenly hooked, very strong, and deep, festooned on the upper mandible, with the tomiæ scarpt and trenchant; nares ovoid, transverse, partially exposed; large ear-tufts; ear-orifice rather small; disk small and imperfect; wings rather long, nearly reaching to the end of the tail; 4th and 5th quills sub-equal and longest, the first six closely emarginate on the inner web; tail moderate, even; tarsus short, very stout, densely feathered; toes short, very strong, partially denuded next the claws, and scaled, rough with bristly feathers, very unequal; inner toe equal to, or longer than, the mid toe; outer toe very short, not versatile, but antagonising; talons very large, acute, very unequal; the inner fore-claw immense; the hind toe and claw about equal to the outer one.

These are birds of large size, very powerful make, and rapacious habits; their bill is aquiline, and they constitute a well-marked genus, very distinct from any of the others of this sub-family; their irides are dark.

71. **Huhua Nipalensis,** Hodgson.

J. A. S. IV, 362; As. Res. XIX. 172—H. pectoralis, Jerdon, Cat. 44, with figure? Bubo orientalis, apud Blyth, Cat. 140—Horsf., Cat. 86.—*Huhu* and *Huhu Chil*, in Nepal; *Uman*, Mal.

The Forest Eagle-Owl.

Descr.—Above dark brown, the feathers barred and edged with pale tawny, the yellow predominating on the back, and back of neck; ear-tufts dark brown on the outer web, with pale bars, fulvous on the inner web, with dark bars; disk brownish-white, edged brown over the base of bill and eye; quills brown, barred, and clouded with whitish-tawny; tail the same; outer edge of scapularies pale yellow, with brown bars; beneath, the chin white, and the rest of

the lower parts, with the flanks, pale fulvous-white, the feathers barred with broadish cordate spots of brown, in some tending to coalesce, and form a pectoral band; tarsal feathers spotted brown.

Bill horny-yellow, irides brown; claws dirty yellow. The wings reach to about $1\frac{1}{2}$ inches from the end of the tail.

Length 22 to 23 inches; wing, $16\frac{1}{2}$; tail, $8\frac{1}{4}$; tarsus, 2; mid-toe and claw, 3; inner do, $3\frac{3}{4}$; bill at gape, $2\frac{1}{4}$; height, $1\frac{1}{4}$.

Hodgson assigns greater dimensions to this bird, *viz.* 28 to 30 inches, extent $5\frac{1}{2}$ feet; but a specimen from Nepal corresponds very closely in measurement with my Malabar one. Hodgson further gives the tarsus 3 inches, and the inner talon along the curve, $2\frac{1}{4}$.

It is doubtful if the Nepal bird be the same as the Malayan one, figured by Temminck; and also whether the one I obtained from Southern India be the same as either: but materials are wanting to form a just conclusion. Blyth and Horsfield join both to the *Strix orientalis*, Horsfield, *strepitans*, Temm. Pl. Col. 174; but Bonaparte, whilst joining Hodgson's bird to Horsfield's, keeps mine as doubtfully distinct. Kaup separates the Nepal bird from the Malayan one, and in this I have followed him, without however having had opportunities of full comparison. For the same reason I have also united the race from Southern India though with doubt;* and considering the great similarity of allied species in this family, which are recognized as distinct, I think we may conclude that there are two, if not three, allied races or species of this form in India (including Burmah) and Malayana.

Hodgson got his Owl in Nepal from the central region chiefly; and it is probably found through a considerable part of the Himalayas, at no great elevation however. I obtained my *pectoralis* in high forest in Malabar, where it is not very common, and is said to kill hares, various birds, cats, rats, and also fish. In this my informant may have been in error, perhaps confounding it with *Ketupa*, which is a well-known fisher. It has a low deep and far-sounding

* Mr. Blyth mentions that in Cassin's list of Strigidæ, *H. pectoralis* is kept distinct from *orientalis*.

moaning hoot. I had a specimen alive at Tellicherry, but it was unfortunately killed by a toddy cat (*Paradoxurus*).

Hodgson asserts that the Nepal Owl preys on pheasants, hares, rats, snakes, and sometimes on the fawns of the Ratwa and Ghoral, and that it is subdiurnal in the depths of the forests. If so, it is an exception to the general rule of Owls with dark irides being strictly nocturnal.

Gen. KETUPA, Lesson.

Syn. *Cultrunguis*, Hodgson.

Char.—Bill large, strong, deep, moderately long, straight at base, gradually curving beyond the cere, moderately compressed and hooked; nares elliptic, partially exposed; large ear-tufts; disk indistinct; ears moderate; wings rather short, reaching not quite to end of tail; 4th quill longest; tail moderate; tarsus rather long, or moderate, stout, naked, reticulate; toes naked, finely reticulate, with three or four scales at the base of the nails, moderately long, nervous, compressed; the hind toe rather large; soles of the feet aculeate; talons subequal, compressed, cultrated below, (except the middle one) sharp; inner claw the largest.

This genus is peculiar to India and Malayana. They are birds of large size with large horns, yellow irides, and inhabit woods and groves, issuing from the forests at dusk to feed on fish, crabs, and aquatic animals chiefly.

72. **Ketupa Ceylonensis**, GMEL.

Strix, apud GMELIN—BLYTH, Cat. 150—HORSF., Cat. 92.—Strix Leschenaultii, TEMMINCK, Pl. Col. 20—Ket. Leschenaultii, SYKES, Cat. 21.—Cultrunguis apud JERDON, Cat. 45—S. Hardwickii, GRAY and HARDW., Ill. Ind Zool, 2 pl. 31.—S. dumeticola, TICKELL—Cultrunguis nigripes, HODGSON, J. A. S., V. 364—*Amrai ka ghughu*, sometimes *Ulu*, H.—*Utum*, Beng.

THE BROWN FISH OWL.

Descr.—Plumage above, vinaceous-rusty, the feathers of the head and neck, with the ear-tufts, streaked longitudinally with dark brown; the back and wing coverts mottled brown and fulvous, each feather being pale brown with a dark brown stripe,

with interrupted pale fulvous and clouded bars; the quills brown, with pale bands, pure fulvous, or creamy-yellow, on the outer web, pale mottled whitish on the inner web; tail brown, with three or four pale fulvous bands, and tipped with the same; disk rusty, with dark brown stripes, the anterior bristles grizzled white and black; chin and throat white, partly brown-streaked; the rest of the plumage beneath vinaceous-rusty, each feather with a narrow longitudinal stripe of rich brown, and numerously cross-barred with faint pale brown wavy bars.

Irides, golden or orange yellow; eyelids, purplish-brown; bill, pale horny-yellow; legs and feet dusky-yellow.

Length, 21 to 23 inches; wing, 16¼; tail, 8; extent, 40 to 45 inches; weight, 3½ lbs. The wings reach nearly to the end of the tail; the inner toe is a little shorter than the mid-toe, but stouter, and its claw larger, equal in length to the toe; the outer toe is sensibly smaller than the inner one, the claws not so much curved as in the next species.

I do not understand how Hodgson named this *nigripes*, stating that the tarsi and feet are purpurescent-dusky; for I have always found them dingy yellow: it may be not so bright as in the next species.

The Brown Fish-Owl is found throughout India and Ceylon, extending into Burmah, and perhaps to China (*vide* Swinhoe, Ornith. of Hongkong), but not to Malayana. It frequents both forests, and groves and gardens in well-wooded districts, and is found to a considerable elevation, it being not rare at Ootacamund on the Neilgherries.

It roosts during the day in the densest part of the jungle, coming forth to feed shortly after sunset, and generally making its way to the nearest water, be it a tank, brook, or river. Here it may be seen seated on some overhanging rock, or bare tree, occasionally uttering its loud dismal cry, which Tickell well likens to *haw, haw, haw, ho*, calling it a repulsive laugh. It feeds much on fish, as was first pointed out by Hodgson, and more particularly, I found, on crabs. Layard says that he has kept this bird alive, and that it fed greedily on fish. The natives assert that it will kill cats. It is said to breed in holes of trees or in rocks, and to lay two white eggs.

73. **Ketupa flavipes,** Hodgson.

J. A. S., V, 364, with figure. Blyth, Cat. 149—Horsf., Cat. 91.

The Tawny Fish-Owl.

Descr.—General color rich tawny; the feathers of the head, with the ear-tufts, and neck, with dark brown streaks, narrow at the base and widening at the tip; the hind-neck, back, and wing-coverts are chiefly dark brown, with two large fulvous spots on each side of the web, passing into bars on the tertiaries and larger coverts, and giving altogether a rich mottled brown and fulvous aspect; the disk tawny; anterior bristles white, as is the ruff on the sides, but tipped with tawny; base of bill, and over the eye, also white; beneath, the chin and throat white, the rest of the plumage tawny, with broad oval longitudinal dashes of dark brown, narrowing on the vent and under tail-coverts; quills brown, with rich tawny interrupted bands; tail the same.

Length, 24 inches; wing, 19; tail, 9; tarse, 3: weight, 3½lbs.

The wings are shorter than the tail. The toes are much larger and stouter than in *K. ceylonensis*, and the claws are sub-equal, the outer one being more curved than the others.

This fine Fish-Owl is confined, as far as we know accurately, to the Himalayas. Horsfield, indeed, in his Catalogue, implies that it also inhabits Siam; but he does not possess a specimen from that country, and he probably introduces it on the faith of some native drawing. Hodgson states that it is common in Nepal up to a considerable elevation; that it flies well by day, and is constantly found on the banks of rivers. He found the stomach filled with fish, and says that they also prey on crabs. They breed in February and March.

The ordinary species of Malayana, *K. javanensis*, Lesson, (*Strix Ketupa*, Horsfield,) extends northward to Arakan, where found together with *K. ceylonensis*.

Other forms of Eagle-Owls are *Lophostrix*, founded on the *S. cristata* of Daudin, sometimes referred to the *Scops* group, and *Pseudoptynx*, Kaup, the type of which is *Syrnium Philippense* of Gray. Kaup says it is like *Ketupa*, but the tarsi feathered, and the ear-tufts barely perceptible. *Nyctea nivea*, the great snowy

Owl of the Northern regions, usually referred to the *Surniinæ*, is, I think with Blyth, more allied to these Eagle-Owls and not very distinct from *Huhua*. It has small ear-tufts.

Gen. Ephialtes, Keys. and Blas.

Syn. *Scops*, Sav.

Char.—Of small size; head rather large, large ear-tufts, orifice of ears moderate, bill moderate, lateral margin somewhat curved; nostrils round on margin of the cere; disk imperfect; wings long and pointed, 3rd and 4th quills longest; tail rather short, even, or slightly rounded; tarsus moderate, feathered; toes naked and scaled, inner toe nearly equal to the middle toe; claws, moderate.

These are very small Owls of pretty and delicate plumage, the irides usually yellow; they are quite nocturnal in their habits, and feed chiefly on insects. Though so much smaller, they are not very distantly related to *Ketupa*. They have generally been called *Scops*, but *Ephialtes* of Keyserling and Blasius has the priority. It is, however, not adopted by Gray, who, in his last list of genera, leaves the genus nameless. They are chiefly found in the warmer countries of both the new and the old world.

Kaup sub-divides them into several sub-genera. His sub-gen. *Scops* has the 1st quill emarginated, 2nd and 3rd very slightly so.

74. **Ephialtes pennatus**, Hodgs.

Scops, apud Hodgson, J. A. S. VI. 369—S. Aldrovandi, apud Blyth, Cat. 147—Jerdon, 2nd Suppl. Cat. 43 bis—S. zorca, apud Bon.—Scops sunia, Hodgson, As. Res. XIX. 175—Jerdon, Ill. Ind. Orn. Pl. 41—S. Malayanus, Hay? E. spilocephalus, Blyth, J. A. S. XV. 8—*Choghad kusial*, and *Sunya kusial* in Nepal—*Chitta guba*, and *Yerra chitta guba*, Tel.

The Indian Scops-Owl.

Descr.—Above, ashy-grey, more or less tinged with rufous or rufous-grey, the feathers dark-shafted, finely mottled with brown, and with a white subterminal spot; wings more rufescent, and without the white spots, except on the outer puscalars, as usual, and on some of the greater coverts; quills rufescent, with darkish double

bars, the interval between the bars dusky or mottled, and the light spaces, or ground colour, on some of the outer primaries, rusty white in some specimens; or it may be said that the quills are dusky rufescent, mottled with pale bands; the tail rufescent, with double bars, in some mottled almost throughout; beneath, the feathers streaked dark brown, and banded with white, and mottled rufous grey and brown, mostly grey on the upper part, and white on the lower part of the abdomen; tarsal feathers barred and mottled; disk ashy white, with a few darker specks, and the shafts of the frontal bristles white; ruff marked with dark brown and rufous.

In the rufous phase the upper parts are uniform bright golden chestnut red, with black shafts, inconspicuous on the back, more distinct on the forehead, ear plumes, and shoulders of the wings; outer edge of scapulars whitish; disk rufous, with some of the feathers white-shafted; ruff deep brown, with the outer feathers black tipped, or black; beneath, deeply tinged with the hue of the back, but with more or less white on the belly, and under tail coverts; the breast and sides of the belly with brownish central black streaks, the latter with transverse pencillings; four faint bars on the inner webs of the tail feathers, and the primaries also indistinctly barred with dusky or mottled brown. The young bird has all the feathers duller red, more black shafted, and there is much white on the lower surface, and the disk has a good deal of white; the scapulars are white externally with black tips; and the bars on the quills and tail feathers are more distinct, brown and mottled.

Bill dusky greenish; iris pale golden yellow; feet fleshy grey.

Length, 7½ to 8 inches; extent, 18 to 19; wing, 5 to 6; tail, 2½ to 3; weight, 2½ to 3 oz.

This little Owl was first considered distinct from its European representative, *S. zorca*, and named *pennatus* by Hodgson. It has been considered identical by some, and is so put in Blyth's and Horsfield's Catalogues. Kaup, however, keeps it distinct from the European one, and all ornithologists agree in distinguishing *sunia*, which is only found in the same localities with the grey one, and must be considered a phase of plumage of

that bird. Indian specimens, even in the grey plumage, can generally be distinguished from European ones, though it is difficult to describe in words in what the difference exists. Two European specimens of *S. zorca* in the Museum As. Soc., Calcutta, differ from Indian specimens of *pennatus* in the upper plumage being more conspicuously streaked, in the bands on the quills being lighter, and in the pale ground colour being wider and more mottled. They are also decidedly larger, the wing being above 6 inches. Blyth's type specimen of *E. spilocephalus*, has the head with larger spots, and the plumage generally somewhat darker. The quill feathers appear to be more decidedly emarginate in *pennatus*, than in *zorca*.

The Indian Scops Owl is found occasionally throughout all India and Ceylon, in forests and well-wooded districts, but is not very common. The first specimen I ever procured was found dead outside my house at Madras, and had probably been killed by the crows, as it was in good case, and very little injured. I have obtained it both from the Eastern and Western ghats, but not from Central India. It is also found in the Himalayas, and extends into Burmah, Malayana, and China. It has a low mild hoot, which is often heard soon after dark. All I have examined had eaten insects. It breeds, according to Hutton, in hollow trees, laying three pure white eggs on the rotten wood, in March.

The Sub-gen. *Megascops*, Kaup, has the first four quills distinctly emarginate, 1st quill equal to the 7th or so. They are larger birds than the last, and are chiefly from America.

75. Ephialtes lempigi, Horsf.

Strix, apud Horsfield—Horsf., Cat. 83—Blyth, Cat. 148—Scops javanicus, Lesson, and Jerdon, Cat. 43—S. malabaricus, Jerdon, 2nd Suppl. Cat. 43—S. noctula, Tem. Pl. Col. 99—Scops lettia, Hodgson, As. R. XIX. 176—S. griseus, Jerdon, 2nd Suppl. Cat. 43 ter.—S. lettioides, Jerdon, apud Blyth, J. A. S. XIV. 182—*Tharkavi choghad*, H.—*Lattya kusyal*, in Nepal—*Pedda chitta guba*, Tel.—*Kashyo takpum*, Lepch.—*Tingkom chukim*, Bhot.

The Large Scops Owl.

Descr.—There are two or three phases of plumage, as well as of size, of this bird, and I am in some doubts if they all belong to the same species. The greyer plumaged ones have usually dark irides, whilst the rufous ones, which I have only obtained from Malabar, have yellow eyes; but in deference to our received Catalogues, I shall place them together and describe each.

First the one described by Hodgson as *Scops lettia.* This one apparently is put down in Bonaparte's Synopsis as ***Eph.*** *sagittatus*, Cassin,* *gymnopodus*, Gray, (omitting the synonym of *S. bahhæmona* from Tennant, which is more likely *S. pennatus*). Bonaparte gives the wings 7 inches long. Above, pale tawny brown, striped, blotched and vermiculated with black; beneath rufous grey, or rufescent whitish, with transverse pencillings of blackish; quills, and tail feathers, with from six to eight dark mottled bars on a tawny buff ground; disk hoary grey, inclining to buff in some, with brownish marks; ear-tufts variegated, black and reddish grey; tarsal feathers, barred brown. Bill greenish or bluish horny; irides dark brown, said to be yellow in the young; feet fleshy grey.

Length, 10 inches; wing, $7\frac{3}{8}$; extent, 24; tail, $3\frac{1}{2}$; tarsus, $1\frac{1}{2}$.

Next my *S. griseus*, *lettioides* apud Blyth. Differs from the last by its smaller size, and uniformly more grey or cinereous plumage, and the tarsal feathers are whitish grey or creamy white, not barred. Its cast of plumage is light cinereous grey, more or less tinted in parts with pale fulvous, and mottled, marbled, and streaked, with various shades of brown; under plumage very light, with dark shafts and pencillings. Length, $9\frac{1}{2}$ inches; wing, $5\frac{1}{2}$ to 6 inches; tail, 3; irides, dark. I have obtained this variety from the forests of the Eastern ghats only.

Lastly, the Malabar, or rufous variety. This differs from both the others in the prevalent tone of plumage being more or less ferruginous or rufous. Above, brown, varied with ferruginous and blackish; beneath, ferruginous, finely vermiculated with brown, and centred blackish; quills with well-defined buff bars. Length, $8\frac{3}{4}$ to

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* Cassin's figure however more resembles *S. rufescens*, and Gray's *S. gymnopodus* appears to be a smaller bird. Vide next page.

9; wing, 6; tail, 2¾; irides, yellow (in those I have seen fresh). This is from the forests of the Malabar Coast and Lower Bengal, extending into Ceylon, Arrakan, Tenasserim, and Malayana.

Kaup in his late Synopsis only gives *lempigi*, but says that the Indian species are so intimately connected that it is very difficult to make out their differences.

If it be conceded that the above are only phases of plumage and size of the same bird, it may be said to have a tolerably wide distribution, being found throughout the whole of India, Ceylon, Burmah, and Malayana, and China also. The largest specimens are from the Himalayas; and in Malabar, and more particularly in Malayana, they are always more or less rufous, and smaller.

This Owl is chiefly found in the forests, avoiding cultivated districts in general, and is quite nocturnal, feeding chiefly on insects.

I know of nothing particular in the habits of this Owl. I have often heard the Malabar one hooting. Layard calls their cry monotonous and melancholy, and says that he found their eggs, two to four in number, in hollow trees, in February, in Ceylon. He also says that they hunt about blossoming trees for Coleoptera, which they catch by darting at them, passing and re-passing, or resting on the leaves and flowers.

Among other recorded species of Scops from Asia are *S. rufescens*, Horsf., a fine, large species from Malayana; and there are others recorded from Japan, Celebes, and the Philippines. Africa and America also possess peculiar species.

Gray has a *Scops gymnopodus*, from India, placed by Kaup in his sub-genus *Acnemis*. It has, says that author, the tarsi over the toes naked, and the toes completely naked—resembles *Scops zorca*, but has shorter tarsi and wings.

Sub-fam. SURNIINÆ, Kaup.

Ear orifice small, oval, no operculum; disk incomplete or nearly obsolete; no ear tufts. The Owls of this family are sometimes called diurnal or twilight Owls, some of them hunting by day, and very commonly in the twilight, and seemingly but little inconvenienced even by the glare of sunlight. The head is unusually small for the birds of this group; their eyes are moderately small, with yellow

irides; their tarsi are usually thickly plumed, and the toes occasionally also. The wings are of moderate length, with the 3rd quill usually the longest; the tail is broad, moderate, or long; their tarsus is of moderate length or short, usually stout, and the toes and claws also moderate, the former plumed or with scattered hairs. Some of them make a near approach in appearance to the diurnal Raptores. Kaup says that they have very round skulls, a large brain, and small pneumacity. They include several distinct forms, only one of which has representatives in India, the group named *Noctua* by Savigny, since properly changed to Athene.

Gen. ATHENE, Boie.

Syn. *Noctua*, Sav, *Nyctipetes*, Sav.

Char.—Bill short, curved from the base, hooked; lower mandible notched, upper one entire; nostrils situate on the margin of a swollen cere; facial disk obsolete; wings moderate, rounded; tail moderate, somewhat even or rounded; tarsus moderate, plumed; toes naked, or with a few scattered bristles; outer toe reversible, very short, with the claws small; hind claw also small.

Gray, in his last list of genera, has substituted *Carine*, Kaup, for *Athene*. Species of this genus are found over the whole world.

Kaup, as usual, has sub-divided them into several sub-genera. His sub-gen. *Athene* has the 1st quill as long as the 6th or 7th; the first five feathers emarginate, but only for the first third; tarsus moderate, and the plumage spotted. To this sub-division belongs, according to Kaup, the true bird of Minerva of the Grecians, *Athene meridionalis*; and also the little *A. noctua* of Europe, named *A. bactriana* by Blyth, J. A. S. XVI. 776. This last has been found in Thibet and Affghanistan, but not hitherto on this side of the Himalayas. It is the *A. nudipes*, apud Gray, *A. gymnopus* Hodgson, of Gray, Catalogue of Hodgson's Nepal birds.

76. **Athene Brama**, TEM.

Strix, apud TEMMINCK, Pl. Col. 68—BLYTH, Cat. 160—HORSF., Cat. 75—Noctua Indica, FRANKLIN—SYKES, Cat. 22—JERDON, Cat. 47—N. tarayensis, HODGSON—*Ulu* H.—*Choghad*, H. in the South—*Katoria pechak*, Beng.—*Pingleh*, Mahr.—*Halhaki*,

Can—*Paini gante*, Tel. *i. e.*, gold eye—*Andi*, Tam.—*Khukhusat* in the North-west.

THE SPOTTED OWLET.

Descr.—Above, earthy grey brown, each feather with two white spots; beneath white, broadly barred, or with cordate brown bars; tarsal feathers not spotted; wing with five or six white interrupted bars, and tail with five; disk white, edged externally with brown; a dusky brown patch outside the eye, and a small dark spot at the inner canthus; ear coverts barred.

Bill greenish horny; irides pale golden yellow; feet dirty greenish yellow.

Length, 8 to 9 inches; wing, 6; extent, 20; tail, 3; tarsus, $1\frac{1}{4}$: weight, 4 oz. The wings are considerably shorter than the tail.

This spotted Owlet is one of the most common and universally spread birds in India, from the Punjab to Burmah and Ceylon. It also extends to Persia and other parts of Asia. It is found everywhere, except in the dense forests; and it does not ascend the hills to any great height. Every clump of trees, and often a large single tree, especially near a village, is sure to be tenanted by a pair, or a small colony of these noisy birds. It often takes up its abode and roosts during the day in the eaves of houses, or under the roof; and if anything disturbs its rest, comes forth with its noisy, chattering, and disagreeable chorus. About sunset it is always on the alert, and soon after sunset it sallies forth to feed. It takes short flights, frequently seating itself on the ground or a paling, or low branch, or outhouse; and thence captures beetles and other insects on the wing, or snatches one off the branch of a tree; now and then taking a low and undulating flight over the plain or garden, and dropping on any small mice, shrew, lizard, or insect it may spy on the ground. I have seen it capturing white-ants on the wing, along with bats, &c. Its usual call is a double note, which is frequently heard at all hours; and when there are several together they all take it up, appearing to be squabbling among themselves. It is a very familiar bird, not easily driven away from the quarters it has taken up. It breeds in holes of trees, or holes in walls, or old buildings, or in the eaves of houses occasionally.

I got some eggs from the roof of my own house at Trichinopoly. It lays usually two to four eggs, which are white and round, from February to June.

"The Maharattas," according to Sykes "have a superstition regarding this species, and a class of people, called 'Pingleh,' live on the credulity of the people by pretending to consult it and predict events." In Southern India it is regarded with aversion. It is used by some Shikarees for catching small birds. They snare one, or catch one with a rod and bird-lime, and taking it to the jungle where the wished-for birds reside, tie it on the ground, near a low bush, and smear most of the outer twigs of the shrub with bird-lime. The little Owlet is soon espied by some bird, and as it is notoriously held in dislike by all small birds, a chatter of alarm is loudly given forth, and joined in by all new comers, some of which perch on the well-limed branches, and when the Shikaree sees those he wishes caught, he runs from his place of concealment, and secures the captives. I am told that this mode of capturing small birds is often resorted to in Italy and the South of Europe.

The next birds belong to the sub-gen. *Tænioglaux*, Kaup; they have 1st quill shorter than the 10th, plumage with cross bands. They are chiefly birds of India and Malayana.

77. **Athene Radiata**, TICKELL.

Strix, apud TICKELL, J. A. S. II.—BLYTH, Cat. 157—HORSF., Cat. 79—S. erythroptera, GOULD—Noctua perlineata, HODGSON, J. A. S. V. 369—N. cuculoides, apud JERDON, Cat. 46—*Jungli Choghad* H. *Chagad* in Nepal—*Chota kalpencha*, Beng—*Adavi paini gunte*, Tel.

THE JUNGLE OWLET.

Descr.—Above brown, uniformly barred with close rays of rufescent whitish and dusky; wings more rufous, especially the primaries, and barred with dusky brown; some of the greater coverts and scapulars with white spots, beneath, throat white, the rest of the body barred transversely with dusky and whitish; under tail coverts white; bill greenish horny; irides golden yellow; feet greenish horny, with dusky claws.

Lenth 8 to 8½ inches or so; extent, 19; wing, 5; tail, nearly 3; tarsus, not quite 1; hind-toe and claw, 1¼.

This Owlet is dispersed throughout India in all large forests, in Malabar habitually frequenting gardens and groves; and also found in Bengal in similar situations, but not on the alluvial soil of lower Bengal. It is probably the bird called *A. cuculoides* in the list of birds observed in North-West India by Mr. Phillips. It is very active in the day time, always on the alert, though not feeding. It is very clamorous, especially in spring, and its very peculiar protracted call must be familiar to many individuals, and is frequently heard in the day time as well as at night. It feeds chiefly on beetles, also on lizards, centipedes, &c. It is rather shy, flying readily in the day time when disturbed. It is sometimes found single, or in pairs, or in small families. It breeds in hollow trees, and lays two or three white eggs.

78. **Athene malabarica**, Blyth.

J. A. S. XV. 280—Blyth, Cat. 158—A. castanoptera, apud Jerdon, 2nd suppl. Cat. 46 bis—*Nattah*, Mal.

The Malabar Owlet.

Descr.—Head, neck, and interscapulars, uniform lightish rufous, with narrow and close dusky rays; wings the same, but the colour deeper, and the bands broader; primaries deep rufous, the first three barred throughout with dusky, the rest mostly unspotted, or obscurely banded at the base, distinctly barred at the tip; secondaries with broad bands throughout, of rufous and dusky; the tertiaries and scapulars, barred rufescent whitish and dusky, the outermost scapulars with large white spots; the lower parts are barred throughout with dusky and white on the belly and flanks, and with rufous and dusky on the breast; the vent and lower tail coverts pure white; tail dusky, with eight or nine whitish bars, somewhat broader than those of the last species.

Length, nearly 8 inches; wing, $4\frac{5}{10}$; tail, 2½.

This very closely affined species appears peculiar to Travancore, Cochin, and the Southern Provinces of Malabar. Its habits do not differ from those of the last.

Another very closely allied species is *A. castanoptera*, Horsf., of Malayana; and *A. castanotus*, Blyth, found in Ceylon, appears to be the same bird.

79. Athene cuculoides, Vigors.

Noctua, apud Vigors, P. Z. S. 1830—Blyth, Cat. 156—Horsf., Cat. 76—N. auribarbis, Hodgson, J. A. S. VI.

The Large barred-Owlet.

Descr.—Dusky brown, rufescent on the back and wings, closely barred with whitish or fulvous; some white on the scapulars and greater wing coverts; chin, and lower part of disk white, and a white breast spot, extending down the middle of the belly to the lower tail coverts; lower abdomen rufescent.

Length $9\frac{1}{2}$ to $10\frac{1}{2}$ inches; wing $5\frac{3}{4}$ to $6\frac{1}{4}$; tail $3\frac{1}{2}$ to 4; tars $1\frac{1}{4}$; mid-toe and claw $1\frac{1}{2}$.

The wings do not reach to end of tail by $1\frac{1}{2}$ inch or so.

This Owl is found throughout the lower Himalayas, extending into Assam, Arracan and Tenasserim, and also as far as China. It feeds on rats, mice, beetles, &c. I have only procured it myself at Darjeeling, where it is not very common. Adams says that it is common in the Lower Himalayan ranges in the northern Punjab. He killed one eating a rat, and its crop contained a mouse and some beetles.

Gen. Glaucidium, Boie.

Syn. *Athene*, pars, auct.

Char.—Nostrils in the middle of a swollen cere, prolonged, and tubular; wing short, 1st quill shorter than the first four, emarginate; 4th and 5th quills about equal; tarsus and toes well developed; plumage distinctly banded.

This is separated generically from *Athene* by Kaup, and its voice differs considerably from that of the last-named birds. It has also shorter wings, a comparatively longer tail, and a peculiar coloration. Kaup, too, asserts that the skull differs somewhat in form from that of *Athene*.

The only Indian member of this genus is separated under the name of *Tænioptynx*, from its plumage being more banded than

the others, which inhabit both Africa and South America. This genus contains the pigmies of the Owls

80. **Glaucidium Brodiæi**, Burton.

Noctua, apud Burton, P. Z. S. 1835—Blyth, Cat. 163—Horsf., Cat. 77—Noctua tubiger, Hodgson, A. R. XIX. 75.

The Collared Pigmy Owlet.

Descr.—Back, wings, and tail, dusky brown, with pale fulvous or rufous bars and spots; a conspicuous broad fulvous collar, marked with black on the back of the neck; the usual white markings on the scapulars; throat and lower part of disk, white; rest of plumage beneath brown, with pale fulvous or white bars; a broad patch of white down the breast, and middle of upper abdomen; and the lower tail coverts, vent, and sides, have also a good deal of white. Some specimens are much more rufous than others.

The wings do not reach the end of tail by $1\frac{1}{2}$ inches. Bill pale greenish yellow; toes the same, but more yellow. Irides bright pale yellow; the toes have a few scattered hairs on them.

Length $6\frac{1}{2}$ inches; wing $3\frac{3}{4}$; tail $2\frac{3}{4}$; tarsus $\frac{5}{8}$; extent 15.

This pretty little owlet is found throughout the Himalayas, from 3,000 or 4,000 feet, to a considerable elevation. It is not rare about Darjeeling, and its low monotonous call or whistle of two notes may be frequently heard at night-fall. It is hence called 'the melancholy bird' at some of our hill stations. Hutton found the nest in a hollow tree at Mussooree, in May, containing three round white eggs. It lives chiefly on beetles and other insects.

Gen. Ninox, Hodgson.

Syn. *Ctenoglaux* Kaup.

Head small, disk obsolete; bill short, cere large, nostrils tumid; wings long, firm; 3rd quill longest, 1st and 2nd moderately graduated; tail long, firm, nearly even; tarsi rather short, feathered; toes long, thinly clad with bristles, and bordered laterally by stiff bristles; lateral toes equal.

This genus by its small head, absence of the disk, firm plumage, and long tail, is one of those owls that makes the nearest approach in appearace to the diurnal Raptores.

81. Ninox scutellatus, Raffl.

Strix, apud Raffles—Blyth, Cat. 155—Athene, apud Horsf., Cat. 80—S. hirsuta, Temm. Pl. col. 289—S. lugubris, Tickell—Jerdon, Cat. 40—N. Nipalensis, Hodgson, J. A. S. —Ath. Malayensis, Eyton—*Choghad besra*, H. *Kulpechak*, or *pencha*, Beng. *i. e.* death owl—*Paini gante vestam*, Tel.—*Tangki perchiok*, Lepch.

The Brown Hawk Owl.

Descr.—Above uniform glossy brown, with a greyish tint on the head; forehead and lores tinged with white; ear coverts dusky; some of the scapulars and tertiaries with white bars; some of the feathers at base of bill black; primaries rufescent brown with dark bands; and tail pale ashy brown, with four broad dark cross bands, the end light greyish, tipped white; beneath, with the throat reddish brown, the rest of the plumage white, with broad oval spots and bars of rusty brown; tarsal feathers brownish.

Bill with the cere green, tip dusky; irides bright golden yellow; feet greyish or reddish yellow.

Length 12 inches; extent 26; wing $8\frac{1}{2}$; tail 5; tarsus $1\frac{1}{8}$; midtoe $1\frac{1}{2}$.

This hawk Owl is found throughout the wooded parts of all India. I have seen it in the Carnatic, Malabar Coast, and Central India. It is rare in the bare Deccan and the North Western Provinces, tolerably common in Lower Bengal, and the Himalayas, and extends through Assam, Burmah and Malayana to China and Japan. Bonaparte gives the Bornean and Japanese races as distinct, respectively *Borneensis*, and *Japonica*, Schlegel. It is said to be found also in Madagascar. It frequents the skirts of the thick forests, and also dense groves of trees, and gardens, in thickly wooded countries. It is nocturnal in its habits, but I have seen it issue forth before dark, and seat itself on the top of a small tree, whence it would make

an upward soar in an oblique direction with a continued flapping of its wings, and then descend with outspread wings to the same perch. If a denizen of forests, it comes to the open glades to hunt for its food, which is chiefly insects, occasionally mice or reptiles. It has a peculiar call, which it frequently utters at night, resembling as Tickell says, the cries of a strangling cat; Buchanan likens it to the cry of a hare when caught by hounds; and Mr. Elliot says, when seized, cries like a child. Layard asserts that sometimes it has a low cooing note like that of *Chalcophaps*, the Imperial Dove. Buchanan further states that the natives consider this bird very unfortunate, and when one of them cries near a house, the inhabitants go forth with lights, to which it has a great aversion, and drive it away. Hodgson gives a comparison of this bird with *Baza lophotes*, and the two correspond most curiously in their measurements.

Other forms of *Surniinæ*, are *Surnia*, or the hawk owls, chiefly of Northern Europe and Asia, among which is, *S. passerina*, L., one of the smallest of all owls; and *Ieraglaux*, from Australia chiefly, a group of large owls, formerly classed under *Athene*. In this group Kaup places *Strix Sonneratii*, Tem., P. C. 21, said to be from India, but whose exact locality is not distinctly ascertained. This however I see has by some been given as synonymous with *Scops rufescens*, but probably erroneously.

The curious Prairie Owl, *S. cunicularia*, which lives in burrows in the plains of South America, also belongs to this sub-family, and is separated as *Pholeoptynx*, Kaup.

ORD. INSESSORES, VIGORS. Perching Birds.

Syn. PASSERES and PICÆ L.—PASSERINÆ, and ZYGODACTLI, Cuv.—PASSERES and SCANSORES of some; OSCINES and VOLUCRES of Bonap; OSCINES and CLAMATORES, or CANTORES and STREPITORES, of Blyth.

Bill very varied in form; feet either with three toes in front, and one behind, on the same plane, or with two before, and two behind; in some few the hind toe reversible, so that all four can be brought to the front, and in a few cases one toe wanting.

The *Insessores*, or perching birds, comprise all birds not included among the swimming or wading birds, the gallinaceous, or game birds, and the birds of prey; and they form the great bulk of the feathered creation, more than two-thirds, indeed nearly three quarters, of all known birds belonging to this great order.

"They comprise," says Mr. Wallace, "at once the most perfect, the most beautiful, and the most familiar of birds. The feathered inhabitants of our fields, gardens, hedgerows, and houses belong to it. They cheer us with their song, and delight as with their varied colors. Their activity and elegant motions are constant sources of pleasure to every lover of nature. They are the birds with which, from our infancy and boyhood, we are most familiar; and we therefore involuntarily derive from them that ideal, or typical form of animal life, with which we connect the general term Bird. Here, too, the greatest variety of forms and habits is found, which are all connected together by such insensible gradations, that to discover in every case, their true affinities has ever been, and still remains, one of the most difficult, and at the same time most interesting, problems the naturalist has to solve."

The *Insessores* differ from all birds, except *Raptores*, the *Ardeidæ*, *Columbidæ*, *Cracidæ*, and *Megapodidæ*, by having the toes all on one plane; and the birds of prey are conspicuously distinct by their strongly-hooked bill and talons, and by having a cere, which, however, is also possessed by the Parrots. Their head is large, the bill extremely varied in form and size, in some short

and hooked, in others lengthened and subulate; in some short and flat, in others long, slender, and curved. The form of the wings and tail, too, differs greatly. There are usually ten primaries, one of them sometimes exceedingly minute, and occasionally wanting. The tail feathers are generally twelve, ten in a very few, eight in one genus, and rudimental in another. The legs and feet are in all proper for perching, and in the more perfect ones suited also for walking on the ground, or hopping. The toes never have a basal connecting membrane, but the outer toe and the middle one are joined at the base, more or less, in most of the order, and in some families for more than half the length.

They vary a good deal in anatomical structure. Their stomach is in most a more or less muscular gizzard, in others simply membranous; the intestines vary in length; most of them have two minute cœca, they are entirely absent in some, and in a few they are very large. The sternum has in most only one emargination posteriorly on each side; two in some; in others a foramen, and in some no trace of either foramen or notch. Most of them have a peculiar complicated larynx with several pairs of muscles; others want them.

All the singing birds belong to this order; most of them build nests of materials interwoven together; others nestle in holes of trees or banks; a very few deposit their eggs on the bare ground. The young in most are born naked. Their food is as varied as their form. Fruits, seeds, and insects form their chief diet; reptiles, fish, and even small mammals or birds, are partaken of by a few.

This vast order of birds presents considerable difficulties in the endeavour to classify them into large groups or tribes. The system of Cuvier, as modified by Vigors, Swainson, Gray, and others, is generally in use among English ornithologists; and as it is the one used in Gray's "List of Genera of Birds," the Catalogues of the British Museum, and in Horsfield's "Catalogue of the Birds in the E. I. C. Museum," I shall, in the main, adopt it in the present work, without implicitly following either one or the other.

I do this, partly because I think it unadvisable to present to the student of Indian Ornithology, for whom this work is chiefly intended, a system of classification different from those they have

probably access to; and partly because I think that the great divisions of the *Insessores*, adopted by Gray and Horsfield, are on the whole tolerably natural. There may be some families introduced into tribes with whom they have no very close affinity, to wit the *Hornbills* among the *Conirostres;* and there are others, as the *Larks* placed among the *Conirostres*, and separated from the *Pipits*; but these are acknowledged by all to be the connecting link between the conirostral and dentirostral divisions, and it matters little whether they are placed at the confines of one or the other.

The following, then, are the groups or tribes of the *Insessores*, adopted in the present work:—

1*st.*—*Dentirostres*, which have the upper mandible generally toothed near the tip, and live mostly on insects or soft fruit.

2*nd.*—*Conirostres*, which have usually, but not always, the tip of the bill entire, and the bill more or less thickened in both mandibles, whilst in the last the upper mandible is generally the thickest. They live mostly on grain, some of them being omnivorous.

3*rd.*—*Tenuirostres*. These have bill slender, acute at the tip and entire, often more or less curved; and they live on soft insects, the juice of flowers, flower-buds, and soft fruit.

4*th.*—*Fissirostres*, whose bill is very varied, but the gape always large, and the diet mostly insects, or animal food of some kind, which they usually capture on the wing.

5*th.*—*Scansores*, which, to a very varied form of bill, add the peculiarity of the toes being always in pairs.

The *Dentirostres* and *Conirostres* have the most perfect feet, of moderate length, suitable in most both for perching and for walking on the ground or hopping, and the toes are usually divided nearly to the base, the outer toe alone being slightly syndactyle in some. The *Fissirostres* have the tarsus usually short and feeble, and the feet more syndactyle than in any other (in two families in pairs); and the *Scansores* have their feet always with two toes before, and two behind. In the *Tenuirostres* the outer toe is usually more or less joined to the middle toe, the tarsus is generally short, and the toes are sometimes large and strong, with well-curved claws, in others small. This is perhaps the least natural of the tribes, but even here a general similarity of habits and food,

combined in some cases with an extensile tongue, or in others with a brushed tongue, and in most with a peculiarly-shaped bill, and a small gape, indicate a marked type.

The *Fissirostres* and *Scansores* can thus be in general at once distinguished from each other, and from the *Dentirostres* and *Conirostres* by the form of the feet, and from the *Tenuirostres* by the bill and feet combined; whilst these three last families are best distinguished, *inter se*, by the form of the bill, aided, in some cases, by other points of structure or habits.

The student of Ornithology, however, must not expect that these tribes, or indeed most of the families, or other divisions, can be rigorously defined, and a full examination of every part of a bird's structure, its habits and nidification, must often be held, before its place in a natural system can be determined. All these tribes exhibit relations, in some cases of affinity, in other perhaps of analogy, with each other, and some indeed may be said to unite by more or less imperfect links. Thus the *Conirostres* and *Dentirostres* appear to unite by means of the Larks on the one side, and the Pipits on the other; the *Dentirostres* perhaps unite with the *Fissirostres* through the Eurylaimi; the latter tribe with the *Tenuirostres* through the Humming birds; the *Tenuirostres* to the *Dentirostres* by means of the Honey Eaters and Bulbuls; the *Fissirostres* to the *Scansores* through the Barbets; the *Tenuirostres* to the *Scansores* perhaps by the Creepers and Nuthatches, and the *Conirostres* to the *Fissirostres* through the Hornbills; and these and other affinities will be pointed out under their respective heads.

Some able Ornithologists separate the Parrots entirely from the rest of the perching birds, making them into a distinct order, and placing them at the head of the class, as parallel to the Monkeys among Mammals. The propriety of this will be considered when we come to the *Scansores*. They divide the rest of the perching birds into two great groups, 1st, Oscines, or Passeres, or Cantores, or singing birds; and 2nd, Volucres, Clamatores, or Strepitores, or Screechers. The former, or singing birds, possess some additional tracheal muscles, necessary for singing, and the latter want them. To carry this dichotomous classification out to its full extent, as some do, requires that the Swallows be separated from the

Swifts, the Humming birds from all the other Honey Suckers, Ampelis from Bombycilla, Pitta from the Thrushes, and many other similar examples; and I agree with Kaup, from whom I quote the above, when he says that, "if from the existence or the want of some small muscles of the lower larynx, anatomists think they can exclude from the order Ornithes all the birds not possessed of the apparatus of singing muscles, then I must confess, that from such a method, consistently pursued, the most artificial system will result."

I shall, with Gray and Horsfield, commence the great series of perching birds, with the fissirostral group.

Tribe, FISSIROSTRES.

Gape of the mouth wide; legs and feet short and feeble; toes more or less connected together: bill, wings, and tail much varied. Usually take their prey on the wing.

The fissirostral tribe of birds appear to be a most natural group. They nearly corespond with the *Syndactyli* and *Heterodactyli* of some ornithologists, and comprise a very varied collection of birds, which, however, all agree more or less with the characters given above. The bill is most varied; in some exceedingly short, depressed, and triangular; in others long and conic; in some slender and curved; in others, thick and wide, or wide and depressed; the gape, however, is wide in all. The wings in most long and pointed, in others shorter and more rounded, yet powerful; the tail long and forked, or short and square, or with the centre or outer feathers greatly elongate. The feet in general are small, and the tarsus short; the toes more or less joined at the base in most; in a few, one toe is wanting, and in some the toes are in pairs; the hind toe is generally very small.

Most of the tribe live on insects which they capture on the wing, either in the air, or pick off the ground; others partake also of fish, small reptiles, and a few live partly on fruit. Their nidification is as various as their external form; but, with one or two exceptions, none of them make nests of materials interwoven together. Some nestle in holes in banks, or in trees, some on the

bare ground, others construct fabrics of clay; and in some the chief component of the nest is a secretion from the bird itself.

In anatomical structure they of course present considerable differences. In most, the sternum has a large double emargination on each side, in some only one, and in others none whatever. The intestinal canal is generally short; the stomach more or less muscular; and they either possess no cœca at all, or two highly developed ones. Few of them possess the singing muscles, and they are consequently unable to inflect their voice.

The Indian birds of this tribe are divided into the following families:—1*st*, *Hirundinidæ*, Swallows and Swifts; 2*nd*, *Caprimulgidæ*, Goat-suckers; 3*rd*, *Trogonidæ*, Trogons; 4*th*, *Meropidæ*, Bee-eaters; 5*th*, *Coraciadæ*, Rollers; 6*th*, *Halcyonidæ*, Kingfishers; 7*th*, *Bucerotidæ*, Hornbills; and lastly, *Eurylaimidæ*, or Broad bills. Three other groups occur in America, *viz.* *Galbulidæ*, *Momotidæ*, and *Bucconidæ*.

Fam. HIRUNDINIDÆ.

Syn. *Chelidones*, of some.

Bill short, broad at the base, depressed, compressed at the tip, more or less curved, not notched; gape very wide; wings long, pointed; tarsi short; feet feeble; hind toe short.

The Swallows and Swifts are well known and familiar birds, many of which habitually associate in vast flocks, and several perform periodical migrations to the north during summer to breed, returning in winter to warmer regions. They live almost entirely on insects which they capture in the air, and for this purpose their mouth is enormously wide, though their bill is small. They are divided into two families, the Swallows, and the Swifts. Some naturalists, Prince Bonaparte, Mr. Blyth, and others, separate these two families, not allowing any affinity between them, chiefly on anatomical grounds, placing the Swifts next to the Humming Birds. Most of our modern English systematists, however, Gray and Horsfield in England, Van Hoeven and Kaup abroad, and a host of others, do not allow these anatomical points, which will be spoken of hereafter, under each group, to weigh against the general conformity of external

structure and appearance, and, I must say, I cordially agree with these. Apart from their internal anatomy, there is little to distinguish them, except the smaller bill, the number of tail feathers, and the structure of the foot, and a partial link between the two appear to exist in *Dendrochelidon* In most large tribes we find some groups separated more or less widely from the typical members, and to remove the Swifts from the Swallows, on account of a differently shaped sternum, and the want of the singing muscles of the larynx, appears to me, as it does to others, forced, unnatural, and artificial. I cannot help here quoting Van Hoeven, in his valuable Hand-book of Zoology, with regard to this question: "I trust it is not to be ascribed solely to custom and to prejudice in favor of a division generally adopted, if I cannot divest myself of this opinion, *viz.*, that Swallows and Swifts should be classed together." Kaup, too, has some strong remarks on this subject. "To separate" says he, "the *Cypselidæ* from the *Hirundinidæ* cannot enter the mind of any one whom scholarship has not deprived of all sense of natural order." Again, "from all these arrangements, it would appear that men, otherwise most capable, if pre-occupied in favour of some particular characteristic type, will in accordance with these, and, in defiance of nature itself, tear asunder the most natural connections, merely to unite forms like the *Cypselidæ* and *Trochilidæ*, which in all other respects are dissimilar."

Sub-fam: HIRUNDININÆ—Swallows.

The bill is short, flat, nearly triangular, compressed at the tips, with a slight emargination, the culmen gently bent at the tip, but not hooked. The gape is large, without any rictal bristles. The wings are long and pointed; the two first quills generally equal, sometimes the first longest. The primary quills are nine in number, the secondaries moderate, covered at the base only by short coverts. The tail is various, even in some, or only slightly emarginate, deeply forked in others. The tarsus is short, the feet small, the middle toe lengthened, the lateral toes nearly equal, and the claws short, slightly curved, acute, and slender. The tarsus is occasionally feathered, and in some the toes also; these last,

like the Swifts, have a tendency to revert the posterior toe. Their plumage is dense, soft, and glossy.

Swallows are found in every quarter of the globe. Some extend their migrations over whole continents; a few are exceedingly local. Some build their nests on rocks or buildings, usually of mud, which they consolidate with their saliva, and which in some are open at the top, in other closed, and with a tubular entrance. In a few cases the nests are made of grass, leaves, hair, and feathers; and one species, according to Gould, makes no nest whatever, but deposits her eggs in the holes of trees. Others nestle in holes in trees, and some in holes in river banks, generally lining the nest copiously with feathers. Their chief diet is insects captured in the air, though some of the American Swallows are said to live much on berries. Many of the Swallows have a pleasing twittering song, which they utter both when seated and occasionally on the wing.

The *Hirundininæ* have their general anatomy much as in other Insessores, the sternum larger, the keel more developed, and the fissures smaller. Some are described as having, like the Swifts, large salivary glands, with the saliva of which they agglutinate the mud used in making their nests. Their intestinal canal is short and wide. Several genera have been instituted for the birds of this family, but without any strongly marked characteristics of structure.

Gen. HIRUNDO, L. (as restricted), true Swallows.

Syn. *Cecropis* Boie (part.)

Char.—Bill rather large, very broad at the base, triangular, compressed at the tip; tail long and forked, or short and square, or sub-furcate; tarsus naked; feet moderate.

The true Swallows are variously classified by different authors. Bonaparte arranges them in two groups:—1st, *Hirundo*, with the whole upper parts synchromous, and living in the open country; 2nd, *Cecropis*, with the head, or rump, or both, more or less rufous, and often streaked below. I shall here follow this arrangement. The hind claw of this group is said to be stronger than in the last. Blyth* groups them according to the kind of nest they build, and this brings them together very much as above.

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* Monograph of Indian Hirundinidæ.

1st.—Hirundo.

A. With the tail long and forked.

82. **Hirundo rustica**, L.

BLYTH, Cat. 1194,—GOULD, Birds of Europe, pl. 54—H. Panayana, GMEL.—HORSF., Cat. 112—H. Jewan, SYKES, Cat. 25—and JERDON, Cat. 258—H. gutturalis SCOP.—H. Javanica, apud HODGSON, GRAY, and BONAPARTE—*Ababil H.*—*Talli-illedi kuravi*, Tam., *i. e.*, Bird without a head.—*Wanna kovela*, Tel.—*Paras pitta*, of the Mharis and Gonds.*

THE COMMON SWALLOW.

Descr.—Above glossy blue black, the chin, throat, and a narrow band on the forehead, deep ferruginous; a slightly glossed black pectoral band; beneath, from the breast, rufescent white; tail, with all, except the mesial feathers, having a large white spot on their inner web.

Length to end of outer tail feathers $7\frac{1}{2}$ inches, of which the tail $4\frac{1}{2}$; middle tail feathers 2; wing $4\frac{7}{8}$, extent 14.

The female has the outer tail feathers shorter, and the under parts whiter. The young may be known by the pale ferruginous hue of the throat, and by the dull color of the upper plumage, as also by the shorter outer tail feathers.

Col. Sykes named this species as distinct from the English Chimney Swallow, but it had previously been described as such by the older Naturalists. It is, however, so exceedingly like the European bird, that Mr. Blyth, in his Catalogue, considered them the same; and on carefully comparing specimens from England and Algiers in the Museum at Calcutta, with Indian specimens from various parts of the country, I can detect no difference. In one specimen from Malacca, and in another from Southern India (collected by myself), the ferruginous hue of the throat extends to the breast, but is of a lighter tint; and in both these specimens the bill appears to be somewhat wider and larger than in other specimens; in all the others, however, there is no apparent

* These native names are applied to all swallows.

difference, and certainly none in the form of the bill, which is said to be longer and more acute in the Indian birds. Bonaparte, Gray, and Horsfield, however, still keep them distinct.

The common Swallow of England is found over the whole continent of India and Ceylon, but is only a cold-weather visitant, leaving the South of India towards the end of March, but lingering in the North till May. The birds that visit India probably breed in the central and northern portions of Eastern Asia. They are found more or less over the whole continent of India, in some places only a few, in other spots in vast numbers. They often settle on the ground, or on a bare tree, and on the Telegraph wires. I have not observed or heard of its breeding in any part of India, but in the neighbourhood of Darjeeling I have seen a pair or two frequenting the same spot under the roof of a native hut, always returning to it after flight, so that I suspected they might be going to build there. Adams says that they breed in Cashmere. Captain Hutton found them breeding in Candahar.

The Swallow extends through Assam, Burmah, and Malayana, to the Islands, and also to China and the Philippines, and, according to the season, indeed, is found over all Europe, Asia, and Africa. In Upper Burmah it comes in early in July, the first birds streaming continuously south for some days, till near the end of the month, when a few remained stationary at Thayetmyo. In India, I have never seen them till towards the end of September, and those birds that come so early to the Burmese provinces must breed at no great distance, probably in the southern provinces of China.

B. With shorter subfurcate tail.

83. **Hirundo Domicola**, Jerdon.

Suppl. Cat., Birds, 261—Blyth, Cat. 1196—Horsf., Cat. 620.

The Neilgherry House Swallow.

Descr.—Above, glossy blue-black, duller on the wings and tail; all the tail feathers, except the centre ones, with an oval white spot on the inner web; forehead, chin, throat, and upper part of breast, ferruginous; the lower parts cinereous brown, passing to black on the lower tail coverts, which are white-tipped.

Length $4\frac{3}{4}$; wing $4\frac{2}{10}$; tail, very slightly forked, 2. The wing reaches $\frac{4}{10}$ or nearly $\frac{1}{2}$ an inch beyond the end of the tail.

This little Swallow I have hitherto only procured on the Neilgherries, nor has it been noticed in any other part of India; but in passing hurriedly through Bangalore, I saw some Swallows flying about, which I believe to have been of this species; and I saw some nests in a verandah of a house there, which must, I think, have been of the same Swallow. It is also found in Ceylon, at Penang, and other parts of Malayana, extending to Java; a very closely allied species (*H. neoxena*, Gould) being found in Australia. I found it breeding, chiefly in deserted bungalows and out-houses, at Ootacamund; also at the Government wooden bungalow at the avalanche: the nest small, open at the top, and profusely lined with feathers; the eggs were two or three, white, spotted with reddish brown. It also breeds in houses at Nuwera Ellia, in Ceylon.

With tail nearly even, outer feathers much prolonged, (sub-gen. *Uromitus*, Bon.)

84. **Hirundo filifera**, Stephens.

Sykes, Cat. No. 24—Jerdon, Cat. 260—Blyth, Cat. 1193—Horsf., Cat. 114—H. filicaudata, Franklin—*Leishra*, Hind.

The Wire-tailed Swallow.

Descr.—Above, very glossy steel-blue; top of head deep ferruginous; lores deep black; beneath pure white, with white spots on all, except the four central, tail feathers, the outermost prolonged in the form of a thin string or wire.

Length, to end of the middle tail-feather, $4\frac{3}{4}$; outer tail-feathers beyond 5 inches, and sometimes more; wing $4\frac{7}{10}$, $1\frac{1}{2}$ inch beyond the square tail, which is $1\frac{1}{2}$ inch only: weight about $\frac{1}{2}$ oz. The female differs in having the wire-like feathers much less developed.

This very beautiful Swallow is found, though in small numbers, throughout India, not in general ascending mountains to any height, but according to Adams occurring rarely in the North-west Himalayas, and Cashmere. It is more rare in the extreme South of India than towards the North, and is unknown on the Malabar coast,

Lower Bengal, and the countries to the eastward. It breeds in old buildings, on walls, in stone bowries or wells, and very commonly under bridges, and in rocks overhanging water, making a small nest, open at the top, and laying two or three eggs, which are white, sparingly spotted with rusty red. I always found the nests single, and we seldom see more than five or six couple in one place. The Hindustani name is given to it from a supposed resemblance of its thin tail feather to the rod used for catching birds with bird-lime, which is called *Leishra*. It is said also to occur in the North-east of Africa.

2nd.—Cecropis, Bon.

A. With the tail long and forked.

85. **Hirundo Daurica**, Lin.

Blyth, Cat. 1198—Horsf., Cat. 113—H. erythropygia, Sykes, Cat. 27—and Jerdon, Cat. 259—H. Nipalensis, Hodgs.—H. alpestris, Pallas, Z. R. A., 1. Pl. 30, with a figure of the nest also—*Masjid Ababil*, H., *i. e.*, Mosque Swallow.

The Red-rumped Swallow.

Descr.—Above, blue-black; narrow supercilium, sides of the head, behind the ear-coverts, and rump, ferruginous; beneath rufescent-white, with dusky streaks; terminal half or third of under tail-coverts abruptly black. Young, more dull in its tints merely.

Length about 7½ inches; extent 13; wing 4½; tail 4.

This Swallow is found over all India, rarely extending to Ceylon; but is more common in hilly or jungly districts than in the more open plains; and it is not so generally diffused anywhere as the last. Mr. Hodgson says that "it is the common Swallow of Nepal, a household creature, remaining with us for seven or eight months of the year." Col. Sykes says,—"It appeared for two years in succession, in countless numbers, on the parade ground at Poona; they rested a day or two only, and were never seen in the same numbers afterwards." I have seen them in every part of India, from the extreme south to Darjeeling. A few couples, at all events, breed in the South of India; for I have seen their nests on a rock at the Dimhutty water-fall on the Neilgherries, twenty or thirty

together. I have found one or two nests in deserted out-houses in Mysore; and they are said to breed very constantly on large buildings, old mosques, pagodas, and such like; hence the native name of Mosque Swallow, in the South of India; but I rather think there is a considerable increase of their numbers during the cold weather, and it was no doubt at the time of their Northward migration, that Col. Sykes saw them in such vast numbers at Poona. From Hodgson's remarks I conclude that they breed in Nepal, and Adams says that they breed in the North-west Himalayas, migrating in winter to the Punjab. He, however, describes the nest as different from those observed by Pallas and myself, for he says,—"Nests oblong, of mud and feathers intermixed; has generally two or more openings." Mr. Swinhoe, too, remarks that, in Northern China, "it breeds under the roof-tops, making a dome-shaped nest, of mud, lined with feathers, and lays four or five white or pinkish eggs." The nest, as figured by Pallas, and observed by myself, is a spherical, or oval-shaped, mud nest, with a long neck, or tubular entrance, of the kind which is called a retort-nest, and the eggs are white, faintly marked with rusty-colored spots. It may often be seen seated on trees in great numbers. Mr. Elliot says (taking, I imagine, a native idea), "It flies after insects, and, when its mouth is full, sits on a tree to devour them." It is spread over all Northern and Central Asia.

Two allied species from Japan, *viz.*, *Japonica*, and *striolata*, T. and Schl., are inserted in Bonaparte's Synopsis.

B. With shorter tail, sub-furcate.

86. **Hirundo fluvicola**, Jerdon.

Blyth, J. A. S., 1855, p. 470.

The Indian Cliff Swallow.

Descr.—Above, glossy black, with some whitish edges to the dorsal feathers; crown dark rufous; rump brownish; beneath white, with black mesial streaks to the feathers of the throat and breast; the under surface of the wings pale brown; tail slightly furcate, with a small whitish spot towards the tip of the inner web of each feather.

Length $4\frac{1}{2}$ inches; wing $3\frac{1}{2}$; tail $1\frac{3}{4}$.

This, says Mr. Blyth, is one of the group of Republican Swallows, *Petrochelidon* of Bonaparte, with similar habits to *H. fulva* of North America. I found it first on rivers in Bundelkund, the Sonar, and the Ken, breeding in company on the rocky cliffs overhanging the rivers. I afterwards found it in one or two localities, not very far from Saugor; on the Nerbudda, near Jubbulpore; and also on the Wurdah river, not far from Chanda. It has hitherto, I believe, not been found by any other observer; and is, doubtless, both rare and local in its haunts, and occurs only in small numbers. The Swallow described by Adams, in his Birds of Cashmere and Ladakh, No. 58, P. Z. S., 1859, 176, is either this species or a very closely allied one. The only essential difference in the description, and that is perhaps an omission, is that the white spots on the tail-feathers are not alluded to.

Probably fifty or sixty nests, all crowded closely together, were seen by me in several of their breeding spots; the nests being retort-shaped, like the last. The birds were busy breeding at the time I first discovered them, towards the end of April and May, but I could not get at the nests to procure the eggs.

The only other Swallow, not previously alluded to, known to the Indian Fauna, is *H. hyperythra*, Layard, confined, as far as we know, to Ceylon, very like *H. Daurica*, but entirely rufous beneath. Many species are peculiar to Africa, two or three of which, *H. cahirica*, *H. rufula*, and *H. senegalensis*, occasionally wander to the south of Europe; and only two or three are known in America.

Gen. COTYLE, Boie—Martins.

Char.—Bill weak, depressed, very broad at base, smaller than in Hirundo, barely hooked at the tip; wings somewhat longer, 1st quill longest, longer than the tail; tail, even or slightly notched; tarsus slightly longer, toes weaker, outer toe proportionally longer, claws lengthened; plumage sombre, and barely glossed.

The Martins may be sub-divided both by colour and nidification into two very distinct groups, the *Sand Martins*, and the *Crag Martins*.

1st.—Sand Martins.

87. Cotyle riparia, Lin.

Hirundo, apud Linnæus—Jerd., Cat. 264—Blyth, Cat. 1205—Horsf., Cat. 116—Gould, Birds of Europe, pl. 58.

The European Sand Martin.

Descr.—Plumage above, and the breast, pale dusky greyish brown; throat, belly, and under tail coverts white; the tail slightly forked; bill black; legs and feet horny.

Length to end of outer tail feather $4\frac{3}{4}$; wing 4; tail 2; centre feathers $\frac{3}{8}$ shorter than the outer ones; tarsus feathered on the back down to the hind toe; the closed wings about equal to the tail.

I have found the Sand-Martin somewhat rare in India. I got specimens at Jaulna, and saw it occasionally at Mhow and Saugor, and also in two or three localities on the Ganges, but very few, generally only one or two together, in company with the common Swallow, and always near water. Mr. Blyth mentions it from the banks of the Sutlej. Adams says that it is common on the Indus and the rivers of the Punjab. Griffith also procured it in Afghanistan, and says that it frequents rivers and sand banks, and has a loud harsh voice, with the same intonation as the black Partridge. It is only a winter visitant to India. It is spread over great part of Europe, Asia, and Africa. In Europe, and Northern Asia, it breeds in holes in river banks, laying 4 or 5 white eggs.

88. Cotyle subsoccata, Hodgs.

Gray, Zool. Misc. 82—Adams, P. Z. S., 1858, p. 495, No. 190—P. Z. S., 1859, p. 176, No. 58.

The Dusky Martin.

Descr.—Above greyish umber, darker on the wings; the throat dirty white; an irregular band of greyish umber on the breast; belly, vent, and under tail coverts, white; tail moderate, nearly even; tarsus nearly naked.

Length 4 inches—wing $3\frac{2}{10}$. Irides hazel; tarsus black.

Sir. W. Jardine, describing Adams' specimen, says "upper parts brownish black, and an irregular brownish black band across the

breast; tarsus almost naked, with only a few downy feathers posteriorly; wings as long as the tail; length $4\frac{1}{2}$ inches."

This species, of which there are no specimens in the Museum Asiatic Society Bengal, nor apparently in the India House Museum, appears to be very closely related to *C. Sinensis*, and indeed Hodgson's species is put as a synonym of that bird in Horsfield's Catalogue, and in Gray's Catalogue of the Fissirostres, B. M; but according to Sir. W. Jardine, to whom Adams sent specimens, it differs in size, being smaller than *sinensis*, and the rump, instead of being pale, is uniform with the colouring of the back. It may not be Hodgson's species, *subsoccata*, but more probably it is, for that gentleman appears to have distinguished it from *sinensis*, and it is not likely that there will be a third small Martin from the same localities. Hodgson obtained this Martin in Nepal, and Adams in Cashmere and Ladakh, and, during the cold weather, on lakes and pools among the salt ranges of the Punjab.

89. Cotyle Sinensis, Gray.

Gray, and Hard., Ill. Ind Zool. 1 pl. 35 f. 3—Blyth, Cat. 1206—Horsf., Cat. 119—Jerdon, Cat. 263—H. brevicaudata, McLelland—H. minuta, Hodgs.—*Abali*, H. and *Nakuti*, Beng. (Buch. Ham.)

THE INDIAN BANK MARTIN.

Descr.—Above, earthy grey brown, darker on the crown, upper tail coverts somewhat albescent; throat and breast, pale greyish; crown, wings, and tail, dusky brown; belly and lower tail coverts white; tarsus not feathered, but with a small tuft.

Length about $4\frac{2}{10}$ inches; wing $3\frac{1}{2}$, or slightly more; tail $1\frac{6}{10}$, very slightly forked; the wings exceed the tail by $\frac{1}{2}$ inch. The young birds have more or less of a rufous tinge.

This little Bank Martin is rare in the South of India, where there are few rivers with high alluvial banks, but very common in the North of India, in every large river from the Godavery northwards, and, swarming on the Ganges. It makes its nest in a hole in high river banks, often several hundreds together. The hole is from $1\frac{1}{2}$ to nearly 3 feet deep, and the nest is lined

with grass and feathers. The eggs are pure white. They breed from December till March. Buchanan Hamilton says they are migratory about Calcutta, coming in October and leaving in March. I have seen them frequently in May, and during the rains also, but they were more scattered at this time. It is possible, however, that some may migrate northwards to China, and northern Asia, and perhaps have a second summer brood there. It is abundant in Burmah on the Irrawaddy river, and it is found throughout the Indo-Burmese countries generally, extending to China.

2nd.—Crag Martins.

These differ from the Sand Martins in the habit of making their nests on rocks, and indeed belong to a different type altogether, distinguished, among other points, by the white spots on the tail.

90. **Cotyle concolor**, Sykes.

Hirundo, apud Sykes, Cat. 26—Jerdon, Cat. 261—Blyth, Cat. 1203.

The Dusky Crag Martin.

Descr.—Smoky brown, slightly paler, and with a reddish tinge beneath; a round white spot on the inner webs of all the tail feathers, except the centre and outer pair.

Length $4\frac{6}{10}$ inches; wing 4, exceeding the tail by nearly 1; tail 2, nearly square.

The Dusky Crag Martin is scattered sparingly over all India, except perhaps lower Bengal. I rarely saw it on the Malabar Coast, but I procured it at Vellore, and Seringapatam, in both places breeding on the large fort walls; also on rocky hills throughout the Carnatic and table land, andin Central India. It also extends to the N. W. Provinces, having been obtained at Delhi by Major Tytler, and I saw it at Allahabad breeding on the fort wall there. I have also found its nest on a rock over-hanging the road on the Goodaloor Ghât of the Neilgherries, at about 4,000 feet of elevation. It also builds occasionally in the eaves of lofty houses, and other large buildings in the Deccan, as I saw at Jaulna. The nest is small,

open at the top. I did not procure the eggs, the nest being usually in rather inaccessible situations. It does not build in company, and is nowhere abundant in individuals.

91. Cotyle rupestris, Scop.

Hirundo, apud Scopoli—Blyth, Cat. 1202—Horsf., Cat .117—Gould, Birds of Europe, pl 56—H. inornata Jerdon, Suppl. Cat. 263 bis—H. rupicola, Hodgs.—H. montana, Hodgs.

THE MOUNTAIN CRAG MARTIN.

Descr.—Above, pale ashy brown, darker on the quills and tail, throat and breast rufous white; abdomen rufous ashy; under tail coverts ashy brown; a large white spot on the inner webs of all the tail feathers, except the two outer and two centre ones; bill black; legs light reddish brown.

Length $5\frac{1}{4}$ inches; wing $5\frac{3}{4}$, exceeding the tail by 1 inch or so; tail $2\frac{4}{10}$, nearly square; extent of wing $14\frac{1}{2}$, weight $1\frac{1}{2}$ oz.

I have only seen this plain colored Martin on the summit of the Neilgherries, and at Darjeeling, occasionally in large flocks, at other times in small parties, and only in the cold weather. At Darjeeling they seemed to be birds of passage entirely, as I saw them in October in immense numbers for a few days, and subsequently they had entirely disappeared. It is found as a mountain species in the South of Europe, N. Africa, and probably through all Central Asia. Hodgson says it is common in Nepal, adhering to the mountains, and remaining all the year. Tristam records it as occuring in Palestine, not gregarious.

Gen. CHELIDON, House Martin.

Char.—Bill somewhat shorter than in Hirundo, but thicker; 1st quill longest; tarsi and toes feathered; tail very slightly forked. Some of the Martins, it is said, have a tendency to revert the posterior toe, like the Swifts.

92. Chelidon urbica, Lin.

Hirundo, apud Linnæus—Horsf., Cat. 622—Blyth, Cat. 1201—Jerdon, Suppl. Cat. 260—Gould, Birds of Europe, pl. 57.

THE ENGLISH HOUSE MARTIN.

Descr.—Above, glossy blue black; wing and tail dull black; rump, and entire under parts, pure white; under parts of shoulders and axillaries greyish white.

Length $5\frac{1}{2}$ inches; extent 12; wing $4\frac{1}{10}$, slightly exceeding the tail; tail $2\frac{4}{10}$: legs fleshy white.

I have only found the English House Martin in small numbers in one locality on the Neilgherries, near their south slope, about 5,000 feet high, on a cultivated ridge of the hills, in the month of March. It has not been recorded from any other locality in India, but is known as an inhabitant of Northern Asia, as well as of Europe and Africa. I am not aware if it breeds on the Neilgherries. In Europe, as is well known, it builds a globular nest of mud, with an opening near the top.

93. **Chelidon Cashmiriensis**, GOULD.

P. Z. S. 1858, p. 356. ADAMS l. c. p. 494.

THE CASHMERE HOUSE MARTIN.

Descr.—Above, black with steel blue reflections; tail brownish black; throat, under surface, and rump, pure white, brownish on the flanks; axillaries, and beneath the shoulder, dark brown.

Length $4\frac{5}{8}$ inch; wing $3\frac{7}{8}$, exceeds the tail more them half an inch; tail 2.

This House Martin is abundant in Cashmere on the rocky banks of rivers, where it was procured by Dr. Adams. It probably extends throughout the Himalayas, for I procured a specimen at Darjeeling. It is very similar to the English bird, but smaller, and differing in the brown axillaries, and in the tail being shorter and less forked. It is most probably the species indicated by Pallas as a variety of *H. urbica*, from Daouria. His measurements quite correspond with those of our bird. He describes the nest as placed in the corners of houses, made of mud, mixed with grass, and well lined with horse-hair and wool, with a large opening near the top. The male bird roosts in the nest with his mate, and sings there. During flight the voice is like that if *H. riparia*. They arrive in Daouria from the south, in April.

The next species has been placed in a new sub-genus, Delichon, Hodgson, apud Moore, P. Z. S., 1854. Its characters are, the bill short, thick, and robust; tail nearly even, shorter than in *Chelidon*; but it differs so very slightly from it that it is barely worthy of separation, and I shall not adopt it.

94. Chelidon Nipalensis, Hodgs.

Delichon, apud Hodgson, Moore, P. Z. S., 1854, pl.—Horsf., Cat. 621.

The Little Himalayan Martin.

Descr.—Upper parts and chin, fine glossy black; wings black; tail black, with glossy edges; throat, and lower parts, and rump, pure white; fore part of the flanks black.

Length, $3\frac{1}{2}$ inches; wing, $3\frac{5}{8}$; tail, $1\frac{5}{8}$.

This pretty little Martin was only sent by Mr. Hodgson in 1853 from Nepal. I procured it at Darjeeling at about 4,500 feet of elevation in the valley of the Rungnoo, near the mineral springs. I found it flying over the jungles in large flocks, towards the close of the rains, and during the cold weather.

There is a very nearly allied species from Borneo, *Chel. dasypus*, Bonaparte, who says that it is intermediate between *Chelidon* and *Cotyle*.

Most of the American Swallows are placed by Bonaparte in the genus *Herse*. The Australian Swallows are very close to true *Hirundo*, and some of them have been placed by Gould under *Atticora*, but that is a South American genus. Several Martins appear peculiar to Africa, and some to America, but these last have been separated under the name of *Progne*, and some of these are said to eat berries. The well known *Progne purpurea* of North America, or the Purple Martin, has the bill lengthened, and shows a tendency to approach the *Artami*, and perhaps some of the *Ampelidæ*.

Sub-fam. Cypselinæ, Swifts.

Bill very small, much hooked; wings excessively long and pointed; tail usually short, of ten feathers only; feet short; hind toe directed inward, but reversible to the front.

The Swifts form a remarkable group of birds, organized specially both for speedy and continued flight, many of them being capable of sustaining themselves in the air for the whole day without once resting. They are distinguished from the Swallows by having only ten tail feathers, by the wings being longer, narrower, and more or less falcate, the first and second quills generally about equal, and the secondaries short and hidden by the coverts; by the smaller and differently formed bill, and by the structure of the feet. The gape is very wide; there are no rictal bristles; the tarsus is short, and the toes are short, with sharp, strongly-curved claws.

The sternum is entire posteriorly, with the keel very large, for the attachment of the powerful pectoral muscles. The humeri are very short, and the furcula also short and much arched. The stomach is muscular, the intestines short; there are no cœca; and they have large salivary glands, which secrete a viscid mucus or gelatine, of which they either compose their nest entirely, or they use it much in consolidating other materials. The feet of most have the toes composed of only two phalanges. They are usually described as having all four toes directed forwards; but the hind toe is usually directed inwards, though capable of being placed forwards, and in a few also opposable.

These differences of structure have caused some naturalists, as mentioned above, to totally separate the Swifts from the Swallows, but a distinct, though it may not be a very close, link occurs in *Dendrochelidon*, and the chief differences are only the much greater development of the volar power, *i. e.* the pectoral muscles and sternum, and other concomitant but subordinate points of organization. As to the number of tail feathers, we will see in the Magpies that a difference of this nature barely makes even a generic distinction.

The whole organization of the Swifts is calculated to produce the maximum power of flight, and they are the fastest flying birds in the world, out early and late home, and even, it is said, copulating on the wing. They rarely or ever descend to the ground, and few of them perch even on trees, but roost in caverns

of rocks, buildings, or in hollow trees, for clinging to the vertical sides of which their claws are so well adapted. They are said not to be able to rise from a plane surface, but Mr. Blyth records instances where both the English and common Indian Swift rose from the ground. They are all more or less gregarious, feed on insects, and they convey pellets of their insect prey to their young, accumulated and held beneath the tongue as in a pouch. They form variously constructed nests, and their eggs are always white. Their voice is usually a scream or twitter, but the most aberrant are said to have a kind of song.

Swifts are found throughout the whole world, excepting the cold regions of the North, and they migrate from cold countries during winter; but in tropical and temperate regions, although they appear to wander about a good deal, they do not perform regular migrations.

They contain four well marked types of structure, all of which are represented in India.

Gen. ACANTHYLIS, Boie.

Syn. *Chœtura*, Steph.

Char.—Toes three in front nearly equal; the hallux shorter, opposable, but also reversible to the front; tarsus covered with a naked skin; tail short, even, or wedged, the feathers with the shafts ending in rigid spines.

This very remarkable genus, of which we have three representatives in India, is found in Asia, Africa, Australia, and America. It has been divided into two groups, one *Acanthylis* verus, chiefly from America, the other *Pallene*, of larger size; but this last group has, I see, been further divided into *Hirundapus*, and *Pallene*, to which the large species of the Himalayas and Southern India are respectively assigned.

1st.—Acanthylis (verus.)

Of small size.

95. **Acanthylis sylvatica**, TICKELL.

J. A. S. XV. 284.

The White-rumped Spine-tail.

Descr.—Above, the whole plumage glossy green black, except the rump which is pure white, and the upper tail-coverts which are also white, the outermost being tipped black; the throat, cheeks, and breast, pale grey, gradually passing into black on the sides of the body; belly and under tail coverts pure white; bill black; irides dark brown; legs and feet livid. The under tail coverts extend nearly to the end of the tail, the spiny shafts of which are thin and flexible.

Length, $4\frac{1}{4}$ inches; wing, 5; tail, $1\frac{1}{2}$.

This pretty little Swift reminds one by its colors and size so much of the Martins that it follows them very appropriately. Tickell was the first naturalist who observed this species, near Chyebassa, in Central India, and subsequently near Darjeeling; and I fancy that I am the only other observer who has procured it. I first saw it south-east of Chanda, in the Nagpore territories, in small numbers, and throughout the whole hilly and jungly tract east of the Wyn-Ganga river, but most abundant on the Indrawutty river; also within a few miles from Chinnoor on the Godavery. I thought that I saw it near Darjeeling, on a cultivated hill facing the Kursion bungalow, but I did not obtain specimens.

It is, of course, chiefly a jungle-haunting species, preferring the vicinity of rivers, and has a very elegant, but, for one of this genus, not remarkably rapid flight. I saw it at first in small scattered parties, afterwards in tolerably large flocks. Tickell states that, in Central India, "it haunts open cultivated grounds in the midst of forest; also the cleared patches on the sides and summits of hills."

An allied species is *A. leucopygialis*, Blyth, from Penang, differing from our bird in having the shafts of the tail feathers much stronger, more resembling those of *A. gigantea*, whilst in our species the tail feathers more resemble those of *A. caudacuta*. The Penang bird is black beneath, and is thus more normally coloured for a Swift. A nearly allied, if indeed distinct species, must be *A. coracinus*, Müll., apud Bonaparte, from Borneo: size of a Martin, black, with the upper tail coverts white, the stems

black; and *A. Sabini* from Africa must be also very near to *sylvatica*, and was considered to be the same by Tickell.

2nd.—Pallene.

There are birds of mostly large size and paler colours.

96. Acanthylis gigantea, Tem.

Cypselus, apud Temminck, Pl. col. 364—Jerdon, Cat. Suppl. 257—Horsf., Cat. 625.—A. caudacuta, apud Blyth, Cat. 418.

The Brown-necked Spine-tail.

Descr.—Crown, nape, and back of neck, wings, tail, and sides of the rump, glossy black, with blue and green reflections; back, scapulars, and the middle of the rump, light brown, palest on the middle of the back; chin whitish; vent and under tail coverts pure white; the rest of the plumage beneath glossy brown; a white spot in front of the eye; also a white border to the rump behind the thigh; and the inner webs of the smallest tertiaries also whitish; bill black; irides deep brown; legs and feet livid blue.

Length, $9\frac{1}{4}$ inches, wing $7\frac{3}{4}$ to 8, extending $2\frac{1}{2}$ inches beyond the tail, which is $2\frac{1}{2}$. The tail is slightly wedge-shaped from the great length of the central naked shafts which are $\frac{1}{2}$ inch long; and all the shafts are strong, robust, and Wood-pecker-like. The 1st and 2nd quills are nearly equal in length.

I first saw this magnificent Swift at the foot of the Neilgherries near Metapolliam, and again at Goodaloor, on the western side of the hills. Since my second supplement was written, I have seen it very frequently in Malabar and the Wynaad, and at times on the sea coast, and hawking over the sea. They are always in immense flocks, but scattered, crossing and re-crossing with a rapidity that the eye can scarcely follow, and vanishing out of sight in a few moments. This and the next must, I imagine, be the swiftest birds in existence. Where they roost at night, or breed, I know not. I think that they probably have a fixed roosting place, and that they travel over immense distances from and to it daily. On one occasion,

some time after sunset, I saw an enormous flock of them pass over the bungalow at Canote, in Malabar, about 14 miles from the coast at Tellicherry. They were flying nearly due west, towards the sea, not steadily, but picking off insects by the way. Where could those birds be travelling to so late? There are some high cliffs on the sea shore near, but, as well from inquiries that I made, as from personal researches, I do not think that they roosted in that neighbourhood. Some of this family, as will be seen under *Colocalia nidifica*, are in the habit of returning very late to roost, and I think it probable that these birds would travel, up or down the coast, many miles to some rock or precipice, their favourite haunt. Had there been any rocky islands out at sea I would have at once supposed they were bound there, but with the exception of the Sacrifice rock, which is too small and low, and which I have visited, I know none in the neighbourhood.

Layard observed this Swift in Ceylon only among the hills, flying in immense flocks, and their wings causing quite a rushing noise in the air. He was told by the natives that they bred in holes in old Rhododendron trees. This I think very unlikely. As this species does not, as far as we know at present, extend to the Himalayas, it probably breeds in some of the rocky islands of Malayana, as it is known to inhabit Penang and other parts of the Malay province. A specimen from Penang wants the white spot at the side of the forehead, is darker, more glossed in the lower parts, and is larger, with a longer wing than a specimen shot by myself in Southern India, but I do not look on these differences as important.

The next bird is now placed under the division *Hirundapus*. It has the naked shafts of the tail feathers less strong, and the spinous tips protude abruptly.

97. **Acanthylis caudacuta**, Lath.

Hirundo, apud Latham—Chæt. nudipes, Hodgson, J. A. S., V. 779—Horsf., Cat. 130—A. fusca, Shaw, apud Blyth, Cat. 419—C. leuconotus, Delessert, Guer. Mag. Zool., pl. 20—Gould, Birds of Australia, 2, pl. 10.

THE WHITE-NECKED SPINE-TAIL.

Descr.—Head, including the upper ear-coverts and lores, back of neck, upper tail coverts, and sides of the rump, wings, and tail, dusky black, with a changeable blue-green gloss; back and scapulars whity-brown, palest in the middle; chin, throat, and neck in front and on the sides, white; lower neck, breast, and belly, sooty brown; vent, lower tail coverts, and a lateral stripe from the thighs backwards, white, more or less mixed with glossy blue-black; inner webs of the last tertiaries white.

Bill black; irides deep brown; legs and feet purplish livid.

Length $8\frac{1}{2}$ inches, ext. 20; wing, 8; tail, 2, nearly square.

This splendid and powerful Swift has only in our province been found in the South-east portion of the Himalayas, in Nepal, Sikim, and Bootan. I frequently saw them near Darjeeling, often in the station itself, at Kursion, and other places in Sikim, scattered in vast numbers over a considerable tract of country, and flying with amazing velocity. Tickell, who observed the species also at Darjeeling, says that "it is at once recognised by his great size, and the prodigious swiftness of his movements. There is nothing I have ever witnessed equal to the flight of this bird. It breeds among the huge wall-like crags of the Himalayas and under the snow level." These Swifts appear to change their ground frequently, for you seldom see them for two days together in the same spot. Hodgson states that "it inhabits the northern regions of Nepal, whence it wanders into the mountains of the central, avoiding however the open and level country. It climbs with great power, aided by its talons and its tail. It probably breeds in some of the precipices of the inner range of hills."

It appears probable that the Australian bird figured by Gould is the same as this one, although it is put as a distinct species by Gray and Bonaparte. In Gould's figure the forehead is pure white, and the chin whiter than in Himalayan specimens, but Mr. Blyth informs me that he has seen the Australian coloration in a specimen from China. Gould's figure, however, is inaccurate, inasmuch as he represents the lateral toes far too short, for they are nearly as long as the mid-toe. He says that this Swift retires to roost (it is said in

hollow trees ?) immediately after sunset. This is contrary to my observations of the last species at all events. I consider it very probably also Pallas' bird, *Hirundo ciris,* which he introduces from Steller's description, as occasionally found in Central Asia.*

Gen. Cypselus, Illiger.

Char.—Wing with the 1st quill equal to the 2nd, or the 2nd longest; tail emarginate, or forked; tarsus feathered, in front at all events; toes and claws nearly equal, short, robust; hallux directed inwards and forwards, not opposable.

The toes of the true Swifts can all be brought forwards, or the two inner ones can be turned backwards. They are found over all the world, and vary a good deal in size.

98. Cypselus melba, L.

Hirundo, apud Linnæus—H. alpina, Scopoli—Gould, Birds of Europe, pl. 53 f. 2—Jerdon, Cat. 254—Blyth, Cat. 421.—

The Alpine Swift.

Descr.—Above wood brown, glossed with purple on the back; wings somewhat darker; beneath, the chin, throat, and abdomen white; a wide pectoral band, brown; sides of the rump, tarsal plumes, and under tail coverts also brown; bill blackish; irides deep brown; legs and toes livid purple.

Length 9 inches; ext. 19½; wing 8½, reaching 2½ inches beyond the tail, which is 3 inches, moderately forked, the outer feathers being about ¾ inch longer than the centre ones; weight 2½ oz.

This fine Swift is not rare in the South of India, all along the range of Western Ghâts from Honore to Cape Comorin, extending its daily flights often to the western sea coast, and occasionally eastwards to Salem, Madura, and Madras even. At times they are very abundant on the Neilgherries, and, during the cold weather, may very generally be seen on the Malabar Coast. I saw, on several occasions, large flocks of them flying eastward towards the sea from the rocky hills near Madura about sunset. On another

* An individual of this species was killed in England some years ago.

occasion I saw, at midday, an enormous flock of them flying eastwards from the same range, a little south of Madura; these, however, were probably merely taking their ordinary rounds of a few hundred miles, but the others flying seaward at sunset—where were they bound for?

I discovered one roosting place of this Swift on the magnificent precipices at the falls of Gairsoppa. Here, especially on the cliffs on each side of the great fall, above 900 feet perpendicular height, these Swifts were congregated in vast numbers, and from the way in which some of them remained about the cliffs at all times of the day, I have little doubt, but that they breed here. Is it possible that all the Alpine Swifts that traverse the south of India, with such amazing speed, meet here nightly for roosting, and for breeding in their appointed season, or are there other similar places of resort for them along the chain of Western Ghâts? However this may be, my own impression, from long observation on the west coast of India, is, that such of these Swifts as have been questing at great distances from their roosting haunts, fly first towards the coast, and then make their way along the sea side, picking up stragglers from other regions on their way to the cliffs of Gairsoppa, or other similar precipices. At Tellicherry, I frequently saw them early in the morning along the sea coast, always flying southwards.

The flight of this Swift, though elegant and rapid, is not nearly so powerful as that of the two last species. Tickell observed the Alpine Swift in Central India, where he says it is common in all the more elevated regions, but flies so high as often to escape observation. "It resorts much," says this observer, "to the tops of high rocks or wooded hills, the summits of which it flies round with great velocity. Flocks sometimes assemble of an evening near large ponds in the jungles, dashing into the water with loud screams, like our Swift at home."

It has not to my knowledge been observed in the eastern Himalayas, but it is said to be common in the hills to the N. W. at all seasons, extending its flight to the Punjab, Cashmere, &c. during the cold weather.

Out of India it is known as an inhabitant of the Alps, Pyrennees, the hilly regions of Western Asia, and of Africa. It was found by recent travellers breeding in Palestine, and in Greece, in rocky ravines, in high cliffs, and even in large old buildings, such as churches and forts, and making its nest of straw, &c., cemented by its glutinous saliva. The eggs are said to be four or five in number, pure white.

99. **Cypselus apus**, Lin.

Hirundo, apud Linnæus.—C. murarius, Temm.—Blyth, Cat. 422—Horsf., Cat. 126—Gould, Birds of Europe, pl. 35, f. 1.

The European Swift.

Descr.—The whole plumage, except the chin and throat, which are white, glossy brown-black.

Length, 7 inches; wing 6¼; ext. 15½; tail 2⅝, rather more forked than in the last, the outer feathers being 1 inch longer than the centre ones. Wing reaches nearly 2 inches beyond the tail.

The European Swift is said by Adams to be common in Cashmere, frequenting rocky streams, and visiting the Punjab in the rains. It is common in Afghanistan, and found throughout Western Asia, Europe, and N. Africa.

100. **Cypselus affinis**, Gray.

Gray and Hardw., Ill. Ind. Zool., 1, pl. 35, f. 2—Sykes, Cat. 28—Jerdon, Cat. 255—Blyth, Cat. 426—Horsf., Cat. 124—C. Nipalensis, Hodgs., J. A. S. V., 780—C. montanus, Jerdon, Suppl. Cat. 255, ter.—*Ababil*, Hind.—*Babila* in some parts.—*Huwa bil-bil*, at Saharunpore.

The Common Indian Swift.

Descr.—Above brown-black, darkest on the back, and glossed with green; head brownish, paler on the forehead; chin, throat, and rump, white; rest of body beneath, brownish-black. Bill black; feet dusky; irides deep brown.

Length about 5½ inches; wing 5; ext. 12; tail 1¾; wing beyond tail, 1½; weight 14—15 dwt. The tail is short, nearly even, with the feathers not pointed.

This is the most abundant and universally spread Swift in India; but at the same time it is often very locally distributed, so as to have caused Col. Sykes to remark "so rare in the Deccan that I have only obtained two specimens." It is found from the Himalayas to the extreme South, and from Calcutta to Scinde and the Punjab; but you may pass over large tracts of country without seeing one. In Ceylon it is said to be migratory. As mentioned in my Catalogue, I on one occasion traversed the whole table-land of Southern India, from the Tapoor Pass, near Salem, to Jalnah, near the northern termination of this great plateau, and only saw it twice, and then in small numbers. As a general rule, however, wherever there are large towns, large pagodas, tombs, or other old buildings, you are pretty sure to find a colony, larger or smaller, of this Swift. In wooded and hilly countries it is occasionally seen about rocks, where it breeds. I saw a few on a cliff on the Neilgherries, which, comparing by mistake with an allied species, I thought to be a new and smaller kind. It does not usually take a long range from its breeding-places, always returning at night to roost in them. It is a noisy bird, especially just before or about their breeding time, rushing into and out of their nests, circling round for a short distance, and screaming incessantly with a rather sharp cry.

The Indian Swifts breed always in company, in colonies of various numbers. Their nests are composed of feathers, grass, straw, cotton-rags, sometimes pieces of paper, agglutinated firmly together by the secreted mucus of their salivary glands, occasionally, perhaps, mixed with mud and rubbish. The inside of the nest is hard, glistening and smooth, and feels, says Theobald, "like coarse card-board." They vary much in shape: sometimes, a first year's nest is open at the top; but they are usually closed, and communicating by the side; at times of moderate size, at other times very large, and communicating by a sort of tubular neck. They are very solid and heavy, and often closely packed together. They are built against the rafters or beams, under the roofs of huts and houses, in the corners of old stone buildings, and in verandahs, either inside or outside, if there is protection from sun and rain. Various observers describe the nest as somewhat differently

constructed. Burgess says that he has seen their nests crowded together under the roofs of old buildings, choultries and temples; one nest, from a rock, was built of mud, lined with grass, and contained two white eggs. Layard states that in Ceylon they breed in great numbers on rocks, also under bridges, and that the nests, built in clusters, are composed of mud and grasses, with a small round entrance, precisely resembling those of the Martin, (*H. urbica*); the eggs, from two to four in number, pure white. Adams says that the nest is of mud, mixed with wool and feathers. In some of these cases the great weight and solidity of the nests may have led the observer to conclude that they were made with mud. The nest has generally a slight hollow in one place for the reception of the eggs, which are usually two in number, sometimes three, and pure white.

Several birds, occasionally seven or eight, occupy one nest for roosting. The birds are very watchful at night, on the least noise, commencing their monotonous pipe. They are said by some to breed repeatedly, generally, I think, twice a year. It is a permanent resident in India, but does not appear to be found out of our province. The flight of this Swift is fluttering and irregular on first sallying from their nests in the early morning, and also at sunset, just before they retire to roost: small parties at these times may be seen flying close together, rather high up in the air, and slowly, with much fluttering of their wings, and a good deal of twittering talk, and after a short period of this intercourse, all of a sudden they separate at once, and take a rapid downward plunge, again to unite after a longer or shorter interval. Their voice, remarks Mr. Blyth, is a sort of shivering scream rather than a twitter.

A very closely allied species exists in *C. subfurcatus*, Blyth, of Malayana and China; and there is an African species which was considered by the late H. E. Strickland to be absolutely identical with the Indian one, the *C. abyssinicus* of Ehrenberg.

101. **Cypselus leuconyx**, Blyth.

J. A. S. XIV., 218—Blyth, Cat. 424—Jerdon, 2nd Suppl. Cat. 255 bis.

The White-clawed Swift.

Descr.—Very similar in color to the last; above, glossy blackish-brown, darkest on the head; the rump white; beneath the chin and throat dirty white; the rest of the body glossy brown; the tips of the feathers whitish. The tail is forked, the outer feathers being about 1 inch longer than the centre ones.

Feet small; claws white, or more or less so. Length $6\frac{1}{4}$ inches; wing $6\frac{1}{4}$ inches; tail $2\frac{1}{2}$; centre feathers $\frac{3}{4}$ inch shorter.

This is a rare species. I obtained one specimen on the western part of the Deccan and several in Malabar, where it frequents rocky hills; but I did not observe their nests. One was procured alive near Calcutta some years ago, which flew into a room; and one is mentioned in Horsfield's Catalogue from Bootan. It is said to be common in the Deyra Doon and the North-west Himalayas. It is the bird recorded by Blyth under *C. vittatus*, Cat. No. 423, as having been killed in the Tyne range near Simla, where it would appear to be not uncommon. It is probably a forest and rock-haunting species, spread sparingly throughout the hilly and wooded regions of India. Its likeness to *affinis* may, however, have led to its being occasionally overlooked.

C. vittatus, Jard., and Selby, is a nearly allied species, but larger in all its proportions, and more especially in the size of its feet. It is found in China and Malayana, if not also in Burmah; and one of these two is probably Pallas's var. *B*, (*leucopyga*,) of *Hir. apus*, which he says breeds in company with that bird in rocks round Lake Baikal.

We now come to another group, distinguished by its small size and plain colors; and in these characters, as in some of its habits, it approaches closely the next genus, *Collocalia*.

102. **Cypselus batassiensis**, Gray.

Blyth, Cat. 427—Horsf., Cat. 125—C. balassiensis, by mistake, Auct.—C. palmarum, Gray and Hardw., Ill. Ind. Zool., 1 pl. 35, 1,—Jerdon, Cat. 256.—*Tari ababil*, *H.*—*Tal-chatta* of Bengal and Central India; both meaning Palm-swallow.—*Putta deuli*, Hindi.—*Batassia* also Beng.

The Palm Swift.

Descr.—Wholly glossy ashy-brown, darker on the wings and tail, and lighter and somewhat albescent beneath; bill black, irides brown, feet dusky-reddish; tail deeply forked; wings about equal to the tail.

Length 5 or $5\frac{1}{4}$ inches; wing $4\frac{1}{2}$; tail (outer feathers) $2\frac{1}{2}$ or something more, $1\frac{1}{4}$ inch longer than the middle tail-feathers; 2nd quill longest, 1st a good deal shorter than 2nd, and attenuating to the tip.

The Palm Swift abounds in all the districts of India, wherever the Palmyra and Cocoa-nut palms are found; being common on the Malabar coast, the Carnatic, the Northern Circars, and Bengal; rare in the Central Table-land and North-west Provinces. It is never found at any distance from where these palms grow. It extends to Ceylon, Assam, and Burmah. It builds its nest almost entirely of the inspissated mucus from its salivary glands, mixed now and then with feathers, or bits of grass, or the down of some seed, often that of the Bombax. It is very small, and always placed on the leaf of the Palmyra *(Borassus flabelliformis)*. A good representation of the nest is given in Hardwicke's Illustrations of Indian Zoology, referred to above. Blyth considers the nest as remarkably similar to those of certain Humming-birds.

The eggs are two in number, small and white. Tickell has evidently been misled in stating that the eggs are large and spotted; the nest and eggs of *Artamus fuscus*, most probably, having been brought, as both birds are often called by the same native name. At times twenty or thirty pairs build their nests on the same tree, but more generally one or two pairs only. Sundevall says that some which he killed had their mouths all slimy, and filled with the down of some *syngenesious* (or *asclepiadeous*) plant, which they appeared to catch during their flight.

The Bengal name signifies, according to Buch. Hamilton, a bird resembling the wind, which is given on account of its rapid flight; this, however, is not remarkably speedy for one of its family, but fluttering and irregular. It is stated by some of the older authors that it is nocturnal. I need not say that this is not the case; but it is often seen flying for some time after sunset, and it is not uncom-

mon for a few Bats and these Swifts to be seen hawking together. Thenote of this Swift, says Mr. Blyth, may be expressed by the sound *titiya* or *titeeya.*

Bonaparte has a *Cyps. Sinensis,* which he places in his Conspectus next to this species. This is the only other recorded Asiatic Swift. Other species are found in Africa, Australia, and America, one of which was mistaken for a Martin (*Chelidon*) by Boie.

Gen. COLLOCALIA, Gray.

Char.—Hind-toe pointing backwards; 2nd quill longest; tail moderate, even or slightly forked; bill very small, much hooked; feet very small.

The birds of this genus comprise the edible-nest building Swallows, remarkable for the curious error, so long persevered in, by which naturalists accounted for the composition of their nests, by stating them to be formed of sea-weeds prepared in the stomach of the bird. As far back as 1781, Hooyman published, in the Batavian Society's Transactions, a tolerable account of the bird, its food, and the way in which the nests were elaborated by a kind of secretion; yet Cuvier himself repeats the vulgar error, asserting that the nest is formed of a whitish and gelatinous substance, arranged in layers, by macerating a peculiar kind of fucus. The salivary glands of the birds of this genus are very large; and it is from these glands, and not the proventricular glands, (as was first made known by Mr. Blyth,) that the material for the nest is elaborated, so that it is in fact simply inspissated saliva, as has likewise been shewn by chemical analysis.

There has been a good deal of confusion about the species composing this group; and the particular one described by Linnæus, *H. esculenta,* has not been satisfactorily determined, but it is most probably one of the common species, very badly described, or mixed up with some other species.—*Vide* Horsf. Cat., p. 98, to 101, for a full account of the earlier history of the species.

103. **Collocalia nidifica,** LATHAM.

Hirundo, apud LATHAM—BLYTH, Cat. 428—HORSF., Cat. 122 —H. brevirostris, McLelland, P. Z. S. 1839—H. unicolor, JERDON,

Cat. 262; subsequently changed to Cypselus unicolor, Suppl. Cat. —C. concolor, BLYTH, J. A. S. XI, 886.

THE INDIAN EDIBLE-NEST SWIFTLET.

Descr.—Of a glossy cinereous or mouse-brown colour, darkest on the head, wings, and tail, and tinged with steel-blue or green; paler beneath.

Length $4\frac{3}{4}$ to 5 inches; wing $4\frac{1}{2}$ to $4\frac{3}{4}$; tail $2\frac{1}{4}$, slightly forked; the centre feathers $\frac{1}{4}$ inch shorter than the outer ones; wing 1 inch, or rather more, beyond tail; extent of wing $11\frac{1}{2}$; weight 7 dwts.; the feathers of the tail very broad.

This bird has long been known as an inhabitant of Java and other islands of the Eastern Archipelago. McLelland first noticed it in this country from the Assam hills. I next recorded it, though without any knowledge of its affinities, as an inhabitant of the Neilgherries. It has since been found in the Sikkim Himalayas, and in Ceylon.

In 1846 I paid a visit, in company with Mr. Ward, M. S. C., to Pigeon Island, some miles out at sea to the south of Honore, which was said to be a resort of these birds. We found a large cavern at one end of the island, with a few of the nests, but of the second make, and inferior to the first, being mixed with feathers and extraneous matter. There were no eggs at this season, (the end of December,) and we did not see any of the birds to identify the species. A native, who had guided us to the cave, said if we waited till 8 or 9 o'clock p. m., the birds would come. We instructed him to do so, and to catch some of them in a net he had with him for the purpose. Next day he returned to Honore, bringing several individuals alive of this species. He said they had not returned till 9. p. m. What a vast distance these birds must have come from, to have taken full three hours after sunset to reach their homes, and what powers of sustained flight are here shown. It is known to have other breeding places on the Malabar coast, *viz.*, the Vingorla rocks, where one hundred-weight of nests is said to be produced annually. If so, this must be the largest breeding-spot on the coast. Also the Sacrifice Rock, 20 miles south

of Tellicherry; besides, I dare say, others. I visited Sacrifice Rock in March 1849. (It is so called because Hyder Ali was said to have left state prisoners, and others occasionally, on this perfectly bare rock, to die of hunger and thirst.) There is one cave here, which had perhaps 50 to 100 nests, and a few had eggs in them. Very few of the nests were of the first make, these being annually taken away by some Moplahs from the main-land. The birds were at this time flying about, feeding on the flies which abounded at the edge of the rock. About twenty couples, perhaps, were present, not more. I doubt if all the places I have enumerated on the Western coast would contain the nests of a quarter of the number of these Swiftlets, which I have seen at once in one locality. If so, where do the others breed? It has been suggested that they may nestle in inland caves, but all my enquiries have failed to discover any in India. Mr. Layard has, however, visited some caves in Ceylon where they breed, and which he has described in the 12th vol. Ann. and Mag. Nat. Hist., 1853, p. 168.

I have seen this Swiftlet all throughout the Western ghâts, and even in Lower Malabar, on the sea-coast; chiefly, however, in the more elevated regions, such as Coorg, Wynaad, and the parts of Mysore bordering the ghâts; but I never saw it in the Carnatic, nor in the bare table-land, nor in Central India. At Darjeeling it now and then comes in great numbers. Tickell, as quoted by Blyth, says that it is a regular bird of passage at Darjeeling, flights of them having been observed moving south-west in August. I have seen it there as late as October, and at other times also. It occurs always in large flocks, spread over a considerable tract of ground, and flies with great speed, much more so than the last species (the Palm Swift).

The nest, when pure, and of the first make, is composed entirely of inspissated mucus from the large salivary glands of the bird. It is very small, bluntly triangular in form, and slightly concave within; of a semi-transparent fibrous sort of texture, bluish-white in color, and with the fibres, as it were, crossed and interlaced. When the nests of the first make are taken

away, the second nests are mixed with feathers, and occasionally other foreign substances. The eggs are two in number, and pure white. Besides Java, this Swift has been found in various parts of the Malay peninsula, Siam, Cochin China, &c., also in the Andaman islands.

The nests of *Collocalia linchi*, or *fuciphaga*, which is a much smaller bird, are considered more valuable than those of our species. It has been found in the Nicobar Islands, and on the rocky coast on the east of the Bay of Bengal, from Arakan downwards; also in Java. Several other species of this genus are recorded from the isles of the Indian Archipelago, as far as New Guinea; one from the Mauritius; and one, or more, from the islands of the Pacific.

Gen. DENDROCHELIDON, Boie.

Syn. *Macropteryx*, Sw.

Char.—Hallux posterior, not reversible; tarsus short, naked, or feathered; wings very long, the first two feathers sub-equal; tail long, forked; head crested.

The Crested Swifts form a very prettily marked group, nearly peculiar to the Indian region, and more especially to Malayana, one species only occurring elsewhere, *viz.* in Africa. They are allied in several points of their external structure, and even in their anatomy, to the Swallows, and evidently form a link between the two sub-families. The feet are constructed, as in the Swallows, of the usual number of phalanges. The sternum is broader posteriorly than in the Swifts in general, with a foramen on each side, and another long oval foramen in the middle; the ridge less deep, and less projecting than in *Cypselus*; the furcula longer and more slender, and the humeri also are longer. The stomach is muscular, and there is a gall-bladder, which is absent in all the Swifts, as well as in the *Caprimulgidæ*.

104. **Dendrochelidon coronatus**, TICKELL.

Hirundo, apud TICKELL—Macropteryx longipennis, SWAINS., apud JERDON, Cat. 257.—BLYTH, Cat. 430.—D. schisticolor, BONAP.—D. velatus, LESSON.—GOULD'S Birds of Asia, pl.

THE INDIAN CRESTED SWIFT.

Descr.—Above bluish-gray, somewhat darker on the head, clearer on the back and rump, and glossed throughout with greenish; wings anteriorly with a slight purple gloss; beneath pale ashy, whitening on the middle of the belly and lower tail-coverts; ear-coverts ferruginous in the male, black in the female with a whitish line bordering the throat.

Bill black; legs blue-black; soles of feet reddish-white; irides deep brown.

Length about 10 inches; wing 6¼; tail 5¼ (the outer feathers), the next 3, the centre ones only 1¾. Weight 1 oz. 6 dwt. The outer tail-feathers reach 1½ inch beyond the tips of the wings.

This very elegant Crested Swift is found throughout the jungles of Central and Southern India, and Ceylon. Tickell found it in Central India; and I saw it in Bundelkund, and the Chanda jungles, and got it from the southern Ghâts of Nellore; but it is most abundant on the Malabar coast and the Wynaad, extending up the slopes of the Neilgherries to 4,000 ft. or thereabouts. It also inhabits the province of Pegu. It is sometimes in large flocks, but usually in small parties; flies very rapidly, and, should there be a tank, or pool of water, or river near, is very fond of descending suddenly, just touching the water, and then rising again with unrivalled grace and great speed. It has a loud Parrot-like call, which it is continually uttering whilst on the wing, and bywhich I have often detected its presence in thick and lofty jungle, before I had seen it. This call Tickell likens to *kia, kia, kia*. He also states that, when seated on a branch, it has a sort of song which he compares to *chiffle-chaffle, klecko-klecko*. It is very fond of perching on bare or leafless trees, and when so seated often raises its peculiar crest quite vertically. It is said by the natives of Malabar to breed in holes of trees, lining the hole with a few feathers. Two eggs, pure white, and of a very elongated form, were brought me as those of this bird.

A very different account was lately given of the breeding of an allied species, *D. klecho*. The nest is said to be similar in form and materials to that of *Collocalia*, but smaller and flatter, fixed on a small horizontal branch, high up a tree, the walls very thin and

parchment-like, made of feathers, mosses, bark, &c., consolidated by saliva. The nest is so small that the bird appears to be sitting on the branch. The egg is described as being single, oval.

Other species of Crested Swift are *D. klecho* from Malayana, *D. comatus* from Sumatra, *D. mystaceus* from New Guinea, *D. Wallacei* from Celebes; and there is one species from Africa.

Fam. CAPRIMULGIDÆ, Vigors.

Syn. *Nyctichelidones.*

Bill small or moderate, (large in a few,) weak, curved; gape very wide, extending below the eyes, generally with numerous and strong bristles; wings, and their coverts, long; tail moderate or long, of ten feathers; tarsus short, scutellate, often feathered in front; feet feeble; the hallux in some reversible; head broad, flat; plumage soft, light, mottled; eyes large; of nocturnal habits.

The Goatsuckers form a peculiar and interesting family, found in every quarter of the world; closely related to the Swifts in some points, but with the soft and dingy plumage of the Owls. Some of the family, which by their large bill are most aberrant, apparently lead to the *Eurylaimi;* others to the Owls, and perhaps to the *Trogonidæ.* Their passage to the *Hirundinidæ* is rendered more easy by such birds as the *Proithera diurna,* whose habits and plumage both tend towards those of some of the larger Swifts.

The name of Goatsucker is common to many of the modern European languages, as it was to the Grecian and Roman of old, and was probably taken from the large size of the mouth, which must have appeared unnecessarily large for any ordinary diet. In England they are sometimes called Night-jars or Eve-jars, Fern-owls or Night-hawks. These names show the popular idea of affinity to the birds of prey, which Vigors, Swainson, and other ornithologists insist on being the case, and which certainly appears to have some foundation in nature, the resemblances being more than those of simple analogy.

The Night-hawks have their general anatomy much like that of the Cuckoos. They have a not very muscular stomach, large cœca,

and a large gall-bladder; the sternum is short, considerably keeled, with two short emarginations behind in some, or four long ones in others. They usually lay their eggs, which are few in number, on the ground, some in holes of trees, and their young, when hatched, are covered with down. Their food is almost universally insects, captured in the air. One species is said to live a good deal on fruit.

They are divided by Gray into three sub-families, two of which have representatives in India.

Sub-fam. STEATORNINÆ, Gray.

Bill large, wide, depressed, strong, moderately curved, and strongly hooked; gape very wide; the base of the bill covered with feathers and bipectinated bristles; outer front-claw of some partially reversible.

This subfamily has the beak greatly larger and stouter than in the typical species. Their attitude is more upright, and they perch crosswise on branches. Some of these groups are said to make a nest of sticks and other materials; others breed in holes in trees, and they are said to lay two white eggs.

Gen. BATRACHOSTOMUS, Gould.

Syn. *Podargus*, Auct., in part; *Bombycistoma*, Hay.

Char.—Bill very large, strong, depressed, broad, moderately curved, the tip hooked and overlapping, and the tomiæ of the upper mandible also overlapping; nostrils narrow, lateral, remote, covered by plumes; no true rictal bristles; wings short, rounded; tail long, rounded or graduated; tarsus short, rather stout, feathered; toes free, moderately strong; the outer toe can be half reversed.

This genus has been lately separated from *Podargus*. It is confined to India and Malayana. The birds are mostly of smaller size than true *Podargus* which is Australian. They have a considerable resemblance in the tints, and markings even, of their plumage to some of the little Scops-owls, and like them they appear to have both a grey phase and a rufous phase.

105. **Batrachostomus moniliger,** Blyth.

Blyth, J. A. S. xvii, 806.—Podargus Javanensis, apud Jerdon, 2nd Suppl., Cat. 253 bis.

The Wynaad Frog-mouth.

Descr.—Above, with the throat and breast, bright bay or chesnut; breast with a torque of white spots, edged black, on the upper part of the breast, and another below it; belly, and lower tail-coverts, pale isabelline, with similar but smaller spots; flanks mottled with dusky; coronal feathers long; occipital feathers tipped white, edged black, forming a nuchal ring continuous with the pectoral collar; a pale rufescent supercilium; the lengthened loral plumes tipped black and white; wing-coverts tipped white, edged black; tertiaries pale mottled dusky, with a minute terminal black and white spot; primaries black; the scapulars like the tertiaries; tail mottled, and obscurely banded, each band ending in a series of white spots, successsively more developed in each outer feather; the lateral halves of the tail separated into two distinct lobes, the tail thus appearing forked.

Length 10 inches; wing, $4\frac{3}{4}$; tail, $4\frac{1}{4}$.

I imagine there is little doubt that this is the species of Southern India which I considered to be *Pod. Javanensis*, and inserted in the 2nd. Supplement to my Catalogue, on the authority of Captain Roberts, of the 36th N. I. He obtained it on the Peria Pass, leading from Malabar into Wynaad. I have never procured it myself. Whilst on the banks of the Indrawutty river in the South-East of the Nagpore country, I saw a Night-jar about dusk, flying about over the sandy and shingly bed of that river, and uttering a peculiar clear cry, quite unlike that of any of the *Caprimulgi* that I know. This was very probably the present species, but owing to the darkness, I failed in procuring a specimen, and did not again observe it. Very little is known of the habits of any of this genus.

Blyth's *B. affinis* from Malacca is much smaller than *Javanensis* and certainly distinct, and it may be the *B. parvulus*, Tem. (Bonap. Conspectus). It is a miniature of *B. javanensis.*

Gen. Otothrix, Gray.

Char.—Bill smaller than in *Batrochostomus*, the feathers over the bill, in front of the head, and a tuft over the ears, prolonged into hair-like bristles; the upper mandible not overlapping the lower one, as in true *Batrachostomus*.

Mr. Gray remarks that in its mode of coloration it approaches true *Podargus* rather than *Batrachostomus*.

106. **Otothrix Hodgsonii**, Gray.

P. Z. S. 1859, p. 101, figd. pl. 152.—Batr. affinis, Blyth, in part?

HODGSON'S FROG-MOUTH.

Descr.—Head black, each feather banded and slightly margined with rufous-white; back and wing-coverts ferruginous, mottled with black, and varied with blotches of white; quills, secondaries, and tertiaries, brownish black, marked on the outer and inner margins with blotches of rufous-white; tail ferruginous, speckled with black, and with oblique bands of rufous-white; beneath, tinged with rufous, and each feather marked near the tip with black.

Length, $10\frac{1}{2}$ inches; wing, $5\frac{1}{4}$.

It must, I think, have been this species which Blyth notices as a variety of his *Bat. affinis*. One of his specimens was profusely mottled with black on a pale ground, but faintly tinged with chesnut; another was mostly rufous or chesnut, with obsolete markings, darker on the crown and shoulders. A specimen in the Museum, As. Soc., Calcutta, from Java, and sent as *Pod. cornutus*, is exceedingly similar to the figure in the Illustrated P. Z. S. The bird figured in Shaw's Zoology as *P. cornutus*, Tem., is very different in appearance from *Pod. javanensis*, as figured by Horsfield, and it is evident that the two species have been confounded. The former bird, *cornutus*, appears to be an *Otothrix*, and is barely (if indeed at all) distinguishable from *Hodgsonii*; whilst *javanensis*, of which there is also a specimen in the As. Soc. Museum, is a true *Batrochostomus*. The following is a brief description of the specimen above alluded to. The whole plumage is mottled and vermiculated with brown on a rufous-grey ground; there is a white nuchal collar, and the outer edges of the scapulars are also white; beneath, the chin is

mottled brown; the throat white, with a narrow pectoral collar of brown; and the rest beneath white, with many of the feathers partially mottled brown, as if in a state of change. Length, $10\frac{1}{2}$ inches; wing $5\frac{1}{2}$; tail 5; bill at gape $1\frac{1}{4}$.

Hogdson's bird was procured, I believe, in Sikim; but I did not myself obtain a specimen whilst at Darjeeling.

Besides the species of this group already alluded to, there is another, of large size, *Batrach. auritus*, from Malayana, figured in Gould's Icones Avium, pl. 7; and *B. stellatus*, Gould, the *crinifrons* of Temm., according to Horsfield. This is probably an *Otothrix*. The first of these is the *Bombycistoma Fullertoni* of Hay, J. A. S., X, which generic name he gave it on the idea that it fed on the large Atlas moth.

Other genera of the sub-family are *Podargus*, from the Australian region; *Ægotheles*, also from New Holland; and *Steatornis* from South America. This last genus contains the remarkable *St. Caripensis*, or Guacharo bird, as large as a fowl nearly, which lives in caverns, and sallies out at night to feed on fruit. The young get very fat, and are collected at certain seasons and boiled down for oil. Some of the species of *Podargus* are of large size. They perch freely on trees, sit upright, and Gould says that the outer toe is reversible. Mr. Blyth, however, who macerated a specimen, asserts that it cannot be fully reversed. Mr. Gould says that the birds composing the genus *Ægotheles*, which are of small size, are remarkably like the smaller Owls in their habits and actions. Like *Podargus* they have an erect carriage, stoop their heads and hiss at any thing that alarms them, and turn their heads round to watch a stranger. Surely this is something more than simple analogy. *Nyctibius*, another genus of this group, is found both in Africa and America.

Sub-fam. CAPRIMULGINÆ.

Bill small, weak, flexible; nostrils tubular; wings long, usually the 2nd. quill the longest; tail usually long; lateral toes short, equal, or nearly so; middle toe long, with the claw pectinated on the inner margin; hallux short, sometimes reversible.

The true Goatsuckers are found in most parts of the world. The tarsus is often feathered; the basal portion of the toes is connected

by membrane, and the hallux is also slightly connected with the inner toe. They all live on insects, which they capture on the wing. They perch upon branches, not across them, for their feet are not suited for grasping, but in direction of the branch. They have usually only two eggs, which are laid in a hollow of the bare ground, more or less under shelter. The use of the pectinated claw has been a subject of much discussion; some naturalists having asserted that they seize their food with their feet, and others that it is used as a comb to scratch their heads to free them from vermin. Both hypotheses are alike untenable, and its presence appears to me to be purely analogical. It is possessed by a few Owls, by some Herons, and by Pelicans.

Gen. CAPRIMULGUS, Lin.

Char.—Bill very short, flexible, broad at base, compressed and bent at the tip; rictal bristles very strong, numerous, directed forwards; other characters as in the sub-family.

The different species are not distinguished by the natives in general, who apply to them all the following names, *Chippak*, or *chappa*, Hind; vulgo-*Dab-churi*, or *Dabhak*, *i. e.*, Squat-bird, also *Andhe-churi*, or blind bird; *As kappri gadu*, Tel., vulgo *Kappa pitta*, *i. e.*, Frog-bird; *Tamor pho*, Lepch.

The tolerably numerous Indian species form themselves into four groups.

1st Group.—Male with all, except the middle, tail-feathers, having a subterminal white spot; tarsus feathered.

107. **Caprimulgus Indicus**, LATHAM.

JERDON, Ill. Ind. Orn., letter press to pl. 24 (in part)—BLYTH, Cat. 409 (in part)—HORSF., Cat. 133—C. cinerascens, VIEILLOT, —C. saturatior, HODGS. (the young).—C. europæus (?) of Sumatra, apud RAFFLES.

THE JUNGLE NIGHT-JAR.

Descr.—Prevalent hue light ashy, with dusky pencillings and black streaks on the feathers of the middle of the head, back, scapulars, rump, and upper tail-coverts, and fulvous blotches on

the wing-coverts; the quills with dark rufous spots or interrupted bars; the tail cinerascent, more or less dark, and the outer feathers more or less tinged with rufous, with narrow black bars, and numerous dusky mottlings; the lower parts rufescent ashy with dark bars and mottlings. Some specimens are darker in their ground-colour than others, and the rufescent markings are deeper. The male has the cheek-stripe throat-band, the spots or interrupted bands on the first three primaries, and the tips of all the outer tail-feathers, white, the latter ended by a narrow dusky tip. The female has these marks more or less rufescent, or fulvescent, and wants the white termination to the tail-feathers. The primaries are strongly mottled towards their tips; the 1st primary almost equals the 4th; the tail is slightly rounded; and the wings reach to about 1 inch from its end.

Length, 12 inches; wing, 7½ to 7⅞; tail, 5½ to 6.

This species, of all the Indian ones, most resembles *C. Europæus*; but that is somewhat smaller, has the scapulars more broadly marked with black, and the white on the first three primaries is only on the inner web; the 1st primary, too, is proportionately longer. The Jungle Night-jar is found all over India, though sparingly. I have procured it from the Malabar coast, the Carnatic, the Deccan, and Sikim. Mr. Blyth has it from Calcutta, the Himalayas, &c.; and it extends into the Burmese countries and Malayana. It affects chiefly forest-countries, and well-wooded districts. Its call is peculiar, being something like *tew-yo-yo*, frequently repeated.

108. **Caprimulgus Kelaarti**, Blyth.

J. A. S. XX, 175; described in note to J. A. S. XIV, 208—C. indicus, apud Jerdon, Cat. 251—Jerd., Ill. Ind. Orn., pl. 24—

The Neilgherry Night-jar.

Descr.—Plumage generally light cinereous, much mottled with black and dusky, and in parts tinged with light fawn and cream-colour; ears black, edged with light rufous; line below the ears extending along the gape, and throat-spot, white; small white

marks on the inner webs only of the first four quills; all the tail-feathers except the centre ones, tipped with white, with a dusky margin; the primaries are slightly mottled at their tip; the wings do not reach to the end of the tail.

Length, 11½ inches; wing, 7¼; tail, 5¾, exceeding the wing by about ½ inch; tarsus, $\frac{6}{10}$; weight 2¼ oz. Some specimens have the wing barely 7.

In my Catalogue, when noticing *C. Indicus*, I pointed out distinctions from that species as described and figured by Gray and Hardwicke, but did not venture to name it. Its chief differences from that bird are its more cinereous or albescent hue, compared with the rufous tint of *Indicus*, and the more mottled black markings, giving it altogether a darker shade. It is, too, a considerably smaller bird.

This Night-jar is found on the summit of the Neilgherries, and probably in other elevated regions of the South of India, and also on the mountains of Ceylon. On the Neilgherries it remains during the day in the dense woods, issuing from them about sunset, coming into the open ground, and perching on stones and trees, and from thence pursuing its insect-prey. It is now and then flushed from the woods when beating for game, and more than one have fallen before the gun of the inexperienced sportsman, its extent of wing and the lazy flapping having caused it to be mistaken for the Woodcock. Its flight is noiseless, at times very rapid, and performed with but few vibrations of its wings; when roused in the day-time it flies, like the others of the genus, but a short distance, and then suddenly alights and squats close to the ground, never, that I have seen, perching in the day-time. Its note, as might have been expected, is very like that of *C. indicus*. A nearly allied species from China is *C. dytiscivorus*, Swinhoe, to which *C. jotaka*, Tem., from Japan, is closely related.

2nd Group.—Two outer tail-feathers only, broadly tipped with white in the male; tarsus feathered.

109. **Caprimulgus albonotatus**, Tickell.

J. A. S. XI, 580—Blyth, Cat. 411—C. gangeticus, Blyth—C. macrourus, apud Blyth, J. A. S. XI, 586—Horsf., Cat. 138.

THE LARGE BENGAL NIGHT-JAR.

Descr.—Crown and tertiaries cinerascent, minutely mottled and marked with a stripe of black dashes along the middle of the crown; upper range of scapularies black, more developed in the male, and bordered more broadly externally with rufescent-white; a broad white patch in front of the neck, as in several allied species; a double spot, or interrupted band of white on both webs of the first four primaries, contracted and rufescent in the female; two outer tail-feathers broadly tipped with white in the male, tinged with fulvous, or rufescent, in the female; rictorial bristles white at the base, black-tipped. Altogether the females are usually paler, more brown, and less ashy than the males.

Length 13 inches; wing 9; extent 25; tail 7, exceeding the wing by 2.

This fine Night-jar is found in the forests of India, extending into Bengal, and to the lower hills of the Himalayas. Tickell states that it is common in the jungles of Central India, skimming over the open parts with a low silent flight. It is not uncommon about Calcutta in gardens and shady spots. I have flushed it in the Botanic Garden at Calcutta, and seen it in the Sikim Terai, but have not myself observed it elsewhere. Its call is like the striking a plank with a hammer, and it has also a low chirp, sometimes emitted on the wing. Hutton says that it is a summer visitant at Mussooree, and lays two eggs of a rich cream-white colour, or fleshy clay, with patches of a darker brown-red, in April.

110. **Caprimulgus macrourus**, HORSFIELD.

BLYTH, Cat. 412—HORSF., Cat. 132—GOULD, Birds of Australia, 2 pl. 9.

THE MALAY NIGHT-JAR.

Descr.—Males have the crown and nape dark brownish-ashy, minutely mottled with black dashes along the crown; the rufous white margins of the scapulars and wings are narrower than in *albonotatus* and *atripennis*; the breast and fore-part of the abdomen are dark, contrasting strongly with the light buffy tint of the hind part of the belly, vent, and lower tail-coverts, which last tend to

be whitish in some; the primaries have no rufous bars underneath, and those on the base of the tail beneath are imperfect; white spots on the primaries, and on the outer tail-feathers, as in the last; also the white spot in front of the neck, this being pale buff in the female, which is generally browner and less ashy, but yet darker than the males of the other affined species. The whiskers are white at their base. This one may be distinguished from the last, in a general manner, by its much darker colour, smaller size, and by the males having the primaries black at the tip, instead of being mottled at the tip.

Length 11 inches; wing $7\frac{3}{4}$; tail 6, exceeding the wing by about $1\frac{1}{2}$ inch; female a little smaller.

This Night-jar is spread through the Burmese countries, and Malayana, to Australia. It has been found, though rarely, in Lower Bengal, in the neighbourhood of Calcutta.

111. Caprimulgus atripennis, Jerdon.

Ill. Ind. Orn. pl. 24 (letter press)—C. Mahrattensis, apud Blyth, Cat. 413—C. spilocircus, Gray.

The Ghat Night-jar.

Descr.—Very similar to *C. macrourus*, but smaller, and with a russet tinge about the nape, breast, and back, not seen in the other species of the group; quills generally pure black in the male, and not mottled at the tip; ear-coverts ferruginous. In females the quills are mottled at the tip. It is throughout of a darker hue even than the last, and may be distinguished from it by its more prevalent rufous tinge.

Length $10\frac{1}{2}$ to 11 inches; wing $6\frac{1}{2}$ to $7\frac{1}{2}$; tail $5\frac{1}{2}$ to 6 inches.

This handsome Night-jar was obtained by me from the Eastern Ghâts, west of Nellore. At first I took it for *macrourus* of Horsfield, to which it is very nearly allied, and then for Sykes's *Mahrattensis*; but that appears to be a very distinct species from both. Our bird has been found also on the Malabar coast and in Ceylon.

3rd Group.—With white spots on the outer tail-feathers in the male; tarsus bare.

112. Caprimulgus Asiaticus, LATHAM.

SYKES, Cat. 30—JERDON, Cat. 252—BLYTH, Cat. 415—HORSF., Cat. 137—GRAY and HARDWICKE, Ill. Ind. Zool. 1, pl. 34, f. 2.

THE COMMON INDIAN NIGHT-JAR.

Descr.—Pale rufescent-ashy, the feathers finely mottled with dusky; the top of the head (as usual) marked narrowly with black; a distinct rufescent collar with black marks; the black markings on the scapulars not extended, but they are much edged with buff, as are all the wing-coverts; back not streaked with black; quills with a white spot on each of the first four feathers and mottled at the tip; the outermost feathers are tipped with white, and there is a white spot on the neck; the lower-parts are lightly mottled and barred.

Altogether this species is of a lighter hue generally than others of the genus, (except the next,) with more fulvous, and less black.

Length 9 inches; extent 18; wing $5\frac{1}{2}$ to 6; tail $4\frac{1}{2}$.

This is the most abundant and generally diffused species of Night-jar throughout India, being found everywhere except at high elevations, or in dense forest-jungle. It extends likewise to the Burmese countries. It is found in low jungle, or thin forest-jungle, in thick groves, gardens, under hedges, &c.; and it is very bold and familiar at night, coming close to houses; I have seen it enter verandahs in search of moths. It usually alights on the ground, sometimes on the house top, or on a wall, rarely on trees. I have often found the eggs, two in number, of a pale fawn or salmon-colour, spotted with dull pale brown, very cylindrical, and nearly equal at both ends. They are generally laid on the bare ground under shelter of a tree or bush. This bird, when flushed, rises with a low chuckle. Its usual note, however, is like the sound of a stone scudding over ice (hence it is sometimes called the Ice-bird); or, as some syllabize it, *tyook-tyook-tyook*.

113. Caprimulgus Mahrattensis, SYKES.

Cat. 31—GOULD, Birds of Asia, pl.—C. arenarius, BLYTH—HORSF., Cat. 135.

SYKES' NIGHT-JAR.

Descr.—Pale ashy-grey, variegated and waved with brown and ferruginous; the breast, the three outer quills in the centre, and the two lateral tail-feathers on each side, marked with white.

Length $8\frac{3}{4}$, tail $5\frac{1}{2}$.

Such is Sykes' description of his species. I lately obtained a specimen of a *Caprimulgus* of this group from the banks of the Ganges near Caragola, which appears to be the present species, and which corresponds pretty closely with a figure of a Goat-sucker among Sir A. Burnes's drawings, from the banks of the Indus.

The general colour of this bird is a pale sandy-grey, very sparingly spotted with black on the head; wing-coverts, tertiaries, and scapulars, with some pale fulvous markings; the quills are brown, grey at the tip, with pale mottled fulvous bands, and a large pale fulvous spot on the first three primaries, on the inner web only of the 1st, on both webs of the 2nd and 3rd, and albescent within; tail with the centre feathers pale grey, finely vermiculated, and with a few very narrow, interrupted zigzag bands of black; the outer tail-feathers are more or less mottled, less prominently banded with black, and with a broad fulvous tip; beneath, the prevalent tint is pale fulvous, mixed with gey mottlings, pale cross lines, and a square triangular fulvous spot on the breast; the under tail-coverts are pure pale fulvous.

Length $9\frac{1}{4}$ inches; wing barely 7; extent 22; tail $4\frac{1}{4}$; tarsus reddish-yellow.

Sykes's specimens were found on the Western Ghâts; and according to Horsfield it is also found in Afghanistan. Bonaparte erroneously puts my *Indicus*, or rather *Kelaarti*, as synonymous with Sykes's *Mahrattensis*.

4th Group.—Both the outer tail-feathers entirely white, and the tarsus naked.

114. Caprimulgus monticolus, FRANKLIN.

P. Z. S. 1831—SYKES, Cat. 29—JERDON, Cat. 250—BLYTH, Cat. 416—HORSF., Cat. 136—C. gymnopus, HODGSON.

Franklin's Night-jar.

Descr.—Pale ashy-brown, variegated with rufous and dusky; the abdomen banded with dusky-reddish; secondaries banded with rufous and black; primaries brownish-black, the four outer ones with a broad white band, the six middle tail-feathers with slender black undulations, the two outer ones on each side entirely white, tipped with brown. The female has a rufous band on the first four primaries, and the tail is all of one colour without any white. She is also generally paler than the male. The general hue of this species is more uniform than in any of the others. Tarsus naked.

Length 10 inches; wing 8; tail $4\frac{1}{2}$; extent 24; the wing reaches nearly to the end of the tail; weight $2\frac{1}{2}$ oz.

This Night-jar is generally spread throughout India, from the extreme south to the Himalayas, extending into Arracan and Burmah, but is somewhat locally distributed. In some localities you will find it very numerous; in others you will not find one. I found it far from being an inhabitant of upland districts, as its name would imply; the first I saw were in the low land of Candeish below the Ajunteh Ghat. I afterwards got it at Nellore, among some low stony and bushy hills, and again in the valley of the Nerbudda in jungle, and also near Mhow and Saugor. Mr. Blyth has obtained it also near Calcutta, where far from uncommon. I have found the eggs of this species; they are like those of *C. Asiaticus*, but larger and with less of the salmon hue, more of a stone colour, and with very pale clay-brown blotches.

C. stictomus, Swinhoe, from China is allied to *monticolus*; and *C. affinis*, Horsfield, of Malayana, is pronounced by Mr. Blyth to be a 'diminutive' of *C. monticolus*.

The only other recorded Goatsuckers from the East, not previously alluded to, are some very beautiful species of Gould's genus *Lyncornis*, so named from the species having *quasi* ear-tufts, thus further resembling the Eared-owls. There is one from the Burmese countries of very large size, *L. cervinicеps*, Gould; another from Malayana; and there are one or two others from the more distant islands. Some of the foreign *Caprimulginæ* have long and forked tails. The American genus *Chordeiles* wants the rictal bristles

entirely; as does as also *Lyncornis*, and the closely affined Australian genus, *Eurystopodus* of Gould.

The 3rd sub-family, the PODAGERINÆ of Gray, is chiefly African. They have a longer tarsus, and the inner toe longer than the outer one. Some of them have remarkably long appendages to their wings, *e. g. Macrodipteryx*, Swains., and *Semeiophorus* of Gould; some have strong rictal bristles, others want them: the *Proithera diurna*, of South America, already alluded to, belongs to this sub-family. Some, *Nyctidromus*, are said to run along the ground, and snap at insects.

Fam. TROGONIDÆ.

Bill short, stout, somewhat triangular, strong, curved from the base; tip, and sometimes the margin, toothed; gape wide; nostrils and base of bill concealed by long tufts of bristles; wings moderate or short; tarsus short, partially feathered; toes short, feeble, two before and two behind, the *inner* toe being turned backwards. Tail long and broad, of twelve feathers; plumage soft; skin very thin.

The Trogons are a remarkable family, of resplendent beauty, the most gorgeous of the species being from America; Africa and India each possessing a peculiar type. They vary in size from that of a Thrush to a Pigeon, and some of the American species have excessively long plumage over the tail, analogous to the *train* of a Peacock. They lay their eggs in holes of trees, and live chiefly on insects which they capture in the air; some, however, perhaps all the American Trogons, are said to eat fruits. They manifest an affinity to the *Caprimulgidæ* in their thin soft skin, downy plumage, feeble feet, and other points.

They resemble both the *Cuculidæ* and *Caprimulgidæ* in their anatomy, but, unlike them, their young are hatched naked. The sternum is short, rather wide posteriorly, doubly emarginate; the furcula is closed in front; the tongue is short; the stomach lax; the intestine short, without cœca, and there is no gall-bladder. Their brain is small. They have an exceedingly dense mass of plumage, very slightly implanted in the skin, and readily coming out, and the feathers possess a very large supplementary plume. In this they resemble the

Gallinaceæ, as well as in the long train of some; their head, too, is small, and the neck very short. Mr. Gould has published a monograph of this family, with very beautiful figures.

Gen: Harpactes, Swainson.

Syn. *Hapalurus*, Reich.

Bill strong, broad and deep, conic, much curved; margins of the mandibles smooth; nostrils partially covered by tufts of hairs; tarsus half-feathered; anterior toes of equal length, barely joined at the base; a naked skin round the eyes.

This genus comprises the Trogons found in tropical Asia. They are birds of rich and beautiful plumage, with a great similarity of coloration; live only in the dense forests, and feed entirely on insects. Two species only are found in our province.

115. Harpactes fasciatus, Gmelin.

Trogon, apud Gmelin—Blyth, Cat. 399—Horsf., Cat. 1037—Trogon Malabaricus, Gould, Mon. pl. 31—Jerdon, Cat. 249—*Kufni churi* H., of some shikarees—*Karna*, Mahr.—*Kakarne hakki*, Can.

The Malabar Trogon.

Descr.—Male, entire head and neck black; the rest of the upper plumage castaneous olive-brown; the lesser wing-coverts, tertiaries, and some of the secondaries, finely streaked with black and white; breast, belly, and lower parts, fine crimson-red; the tail with the centre feathers the same colour as the back, but more chesnut; the lateral feathers black and white.

The female wants the black head and neck, which are concolorous with the body; the tertiaries and coverts are finely banded black and brown, and the lower plumage is ochreous-yellow instead of red.

Bill deep blue; orbitar skin smalt-blue; irides dark brown; feet light lavender-blue.

Length 12 inches; extent 16; wing 5; tail 6; bill at front $\frac{1}{2}$; at gape 1 inch; tarsus $\frac{6}{10}$; weight $2\frac{1}{2}$ oz.

The Malabar Trogon is found in the forests of Malabar from the extreme south to about N. L. 17°, reaching up the Ghâts

and hill ranges to at least 3,000 feet. It is also found in some of the forests of Central India, and in Ceylon.

It prefers the more elevated situations, at about 2,000 feet or so, and keeps generally to the thickest parts of the woods. It is often to be seen seated motionless on a branch of a tree, occasionally flying off to capture an insect on the wing, sometimes returning to the same perch, but oftener taking up a fresh position, and in this way wandering about a good deal. It is usually solitary, sometimes in pairs, and I have seen four or five together. Its food consists of various insects, chiefly coleopterous. Layard says that it is found in small parties of three or four, and feeds on spiders, mantidæ, and coleoptera. I am not aware of having heard its note, and certainly have generally found it a silent bird. Tickell, however, says that it has a wild querulous note like the mewing of a cat. Its Hindustani name is given from its sitting with the head sunk in the shoulders, as if it had no neck, or as if dressed in a faquir's *kufni*.

116. Harpactes Hodgsoni, Gould.

Gould, Monog. pl. 33 and 34—Blyth, Cat. 396—Horsf., Cat. 1036—T. erythrocephalus, Gould—*Suda sohaghin* (the male) and *Cuchcuchia* (the female) Beng.—*Hammesha peeara,* Hind, *i. e.,* always thirsty.—*Sakvor-pho.*, Lepch.

The Red-headed Trogon.

Descr.—Male, head, nape, back of neck, throat, and breast, rich, but dull, dark crimson; back, scapulars, rump, and upper tail-coverts, ferruginous-brown, brightest on the rump; the wing coverts and tertiaries are undulated black and white; the quills black, with the outer margin of the primaries whitish; the two centre tail-feathers deep chesnut, with black tip, the next pair chesnut on the outer web, black on the inner web and at the tip; the outer three very much graduated, black, with a broad white tip, and part of the outer web also white, nearly to the extent of two-thirds on the outermost feathers; lower parts from the breast rich scarlet; a narrow white line divides this from the

crimson of the breast. The female differs in having the whole head, neck, breast and upper parts ferruginous-brown, lightest on the rump and upper tail-coverts; lower parts light crimson; the lesser wing-coverts and tertiaries finely undulated with black and brown.

Bill deep smalt-blue, blackish at the culmen and on the tip; irides chesnut-brown; orbitar skin deep lavender-blue; legs and feet pale lavender.

Length 13 inches; wing 6; extent 18; tail $7\frac{1}{2}$; bill at front $\frac{9}{16}$; tarsus $\frac{3}{4}$.

This handsome Trogon is found in the Himalayas from Nepal eastwards, in Assam, Sylhet, Arrakan, and Tenasserim. It prefers hilly places at from 2,000 to 4,500 feet. At Darjeeling I found it chiefly about 4,000 feet, frequenting dark shaded valleys, and flying from tree to tree at no great elevation; or a few of them together keeping near the same spot, making sallies every now and then, and seizing insects on the wing. It feeds on coleoptera chiefly. Tickell, who lately observed it on the Tenasserim hills, about 3,000 feet and upwards, says that it flies in small troops, is active and vociferous in the morning, solitary and quiet during the heat of the day. I had the eggs of this Trogon brought me at Darjeeling. They were said to have been taken from a hole in a tree; they were two in number, white, and somewhat round. There was no nest, it was stated, only some soft scrapings of decayed wood.

Several species, having a general resemblance in the mode of coloration to these Indian Trogons, are found in Burmah, Malacca, and the islands, *viz.*, *H. oreskios* in Burmah, *H. kasumba*, *H. Diardi*, and *H. rutilus*, in Malacca and Sumatra, *H. Reinwardtii* in Java, and *H. ardens* in the Philippines.

There is only one species in Africa of rather small size; and two distinct forms in South America, some of them of resplendent green and gold plumage, and with long scapulars, and plumes covering the tail, forming the genus *Pharomacrus*. The American Trogons are described by Swainson and Wallace as darting at a fruit with a loud whirr of their wings, seizing it dexterously on the wing, and returning to their original seat.

Fam. MEROPIDÆ. Bee-eaters.

Bill lengthened, rather slender, slightly curved throughout, sharp-pointed; wing long and pointed; tail generally even, moderate or long, with the central feathers frequently elongated.

The Bee-eaters form a group of beautiful birds peculiar to the warm regions of the old world, one or two extending in summer into the temperate parts. Green is the predominant colour of their plumage, varied with blue, yellow, and chesnut. They feed on insects, often on wasps and bees, and hence their common name in English and other European languages, and they always capture them in their air. They usually crush their insect-prey when they seize it, killing it at once, and thus do not get stung. Their flight is easy and graceful, and at times very rapid. They breed in holes, in banks of rivers chiefly. In India they are popularly known as Flycatchers.

They have a doubly emarginated sternum, a short heart-shaped tongue, a membranous stomach, short intestines, and cœca of the same dimensions as in the *Cuculinæ*, &c. Their skin is remarkably thick.

Swainson joined the Bee-eaters and Rollers in one family; and in a system of classification where groups are formed of progressively larger dimensions, perhaps both these families, and the Motmots, might be included in one natural division, equivalent to the Kingfishers, Jacamars, and Puff-birds, which some naturalists class together.

Gen. MEROPS, Lin.

Char.—Bill very long, slender, slightly curved, depressed at base, somewhat compressed for the rest of its length; culmen keeled, tip entire, sharp, not bent down; nostrils partially covered by a tuft of bristles; some small rictal bristles at the base of bill; wings long, pointed; 1st quill longest; tips of the lesser quills emarginate; tail somewhat lengthened, nearly even, the two centre feathers occasionally lengthened; tarsus very short; feet short, with the two lateral toes much syndactyle; outer toe much longer than the inner one; claws acute, strong, well curved.

117. **Merops viridis**, Lin.

M. orientalis, Lath.—Sykes, Cat. 23—M. Indicus, apud Jerdon, Cat. 239—Blyth, Cat. 236—Horsf., Cat. 104—M. torquatus and M. ferrugiceps, Hodgs.—Edw. Birds, pl. 183—*Hurrial*, and *Patringa*, Hind.—*Bansputtee i. e.*, bamboo-leaf, in Bengal.—*Chinna passeriki*, Tel. *i. e.*, small green bird.

The Common Indian Bee-eater.

Descr.—Plumage above bright grass-green, the head, nape, and hind neck, burnished with golden; a black eye-streak from the base of the bill through the eye to the top of the ear-coverts; quills with a reddish tinge, especially on the inner web, and all tipped dusky; tail duller green, the webs dusky at the inner edge; the two central feathers elongated; chin and throat verdigris-green, and a black collar on the top of the breast; the rest of the lower parts bright green, mixed with verdigris, paler and more cœrulescent on the lower abdomen, and under tail-coverts.

Bill black; irides blood-red; feet dark plumbeous.

Length to end of lateral tail feathers 7 to $7\frac{1}{2}$ inches; centre feathers $1\frac{1}{2}$ to $2\frac{1}{2}$ or more; wing $3\frac{1}{2}$ to $3\frac{3}{4}$; tail outer feathers $2\frac{8}{10}$, extend $1\frac{1}{4}$ inches beyond end of wing; two centre feathers nearly 5; bill at front $1\frac{1}{10}$; tarsus $\frac{3}{8}$.

A variety, with the head and neck more rufous than usual, named *ferrugiceps* by Hodgson, is occasionally met with in some districts, and appears to be the prevalent race in Burmah. Hodgson's *torquatus* has a verditer-blue throat; this last variety is by no means uncommon in Southern India, but I do not know under what circumstances it occurs, and whether permanently or otherwise, but it probably partially depends on the abrasion of the feathers of that part.

The Indian Bee-eater is found over the whole of India, extending to Arrakan, the Indo-Chinese countries, and to Ceylon. It does not ascend mountains, to any height at least, and the specimen in the British Museum from Mr. Hodgson, marked from Darjeeling, assuredly never was killed there, though it occurs at the foot of the hills.

It is a very common bird, and is a most characteristic adjunct of Indian scenery. It generally hunts, like the Fly-catchers, from a

fixed station which may be the top-branch of a high tree, or a shrub, or hedge, a bare pole, a stalk of grain or grass, some old building, very commonly the telegraph-wires, or even a mound of earth on the plain. Here it sits looking eagerly round, and on spying an insect, which it can do a long way off, starts rapidly, and captures it on the wing with a distinctly audible snap of its bill, it then returns to its perch, generally slowly sailing with outspread wings, the copper burnishing of its head and wings shining conspicuously, like-gold, in the sun-beams. Sometimes it may be seen alone, or in small parties, seated near each other, but hunting quite independently. It frequently takes two or three insects before it re-seats itself on its perch, and in the morning and evening they collect in considerable numbers, and, often in company with Swallows, hawk actively about for some time. I have seen one occasionally pick an insect off a branch, or a stalk of grain, or grass; and Mr. Blyth informs me that he had seen a number of them assembled round a small tank, seizing objects from the water, in the manner of a Kingfisher.

They roost generally in some special spot, sometimes a few together in one tree; but at some stations, all the birds for some miles around, appear to congregate and roost in one favored locality. The bamboo tope at Saugor is a celebrated spot of this kind: here Crows, Mynas, Parrakeets, Bee-eaters, Sparrows, &c. collect from miles around; and the noise they make towards sunset, and early in the morning, is deafening.

The Bee-eater has a loud, rather pleasant rolling whistling note, which it often repeats, especially in the morning and towards the evening, and often whilst hunting. They sometimes collect in small parties towards sunset on a road, and roll themselves about in the sand and dust, evidently with great pleasure.

They breed in holes, in banks of ravines or of rivers, and on road sides, laying two to four white eggs. Burgess mentions that in a nest that he examined there were three young ones all of different ages. They breed from March to July according to the locality, earlier in the north of India, later in the south. Mr. Blyth observed them breeding near Moulmein as late as the middle of August.

A very closely allied species inhabits North-east Africa, formerly considered the same. It is *M. Lamarckii* of Cuvier, *viridis* apud Ruppell, *viridissimus*, Sw. & Bon., figured P. E. 740.

118. **Merops Philippensis**, Lin.

Jerdon, Cat. 240—Blyth, Cat. 232—Horsf., Cat. 105—M. Javanicus, Horsf.,—M. typicus, Hodgs. Pl., Enl. 57—*Boro putringa*, Beng.—*Burra putringa*, H.-*Komu passeriki*, Tel.

The Blue-tailed Bee-eater.

Descr.—Head, neck, back, wing-coverts, and tertiaries, dull grass-green, with more or less rufous gloss; rump and upper tail-coverts bright azure-blue; a black eye streak from the base of both mandibles to the end of the ear-coverts, with a pale blue line beneath; quills dull green, rufous towards the edge of the inner webs, and black-tipped; tail dull blue; chin yellow-white; throat dark ferruginous, extending to the sides of the face and neck as far as the end of the ear-coverts; breast and upper abdomen green, glossed with rufous; lower abdomen and vent paler, and with a blue tinge, and the under tail-coverts pale blue. The tail is nearly even, with the centre pair of feathers elongate. and the pair next them slightly shorter.

Bill black; irides crimson; feet dusky plumbous. Total length to end of mid tail-feathers 12 to $12\frac{1}{2}$; wing $5\frac{1}{4}$; tail, outer feathers $3\frac{1}{4}$, extending $1\frac{1}{2}$ inch beyond wing; centre pair $2\frac{1}{2}$ inches more; bill at front $1\frac{6}{10}$; tarsus $\frac{1}{2}$ inch.

This handsome Bee-eater is spread more or less over all India, and Burmah, extending to Ceylon in the south, and to the Malay peninsula and islands in the east. It prefers forest-countries, and well-wooded districts, and, though generally spread, is yet somewhat locally distributed, and you may pass over considerable tracts of country without meeting one. The Malabar coast is always a favorite haunt, and this Bee-eater appears to prefer the neighbourhood of water. It is sometimes found in the Wynaad, and other elevated regions of Malabar, but in general prefers a low level. It is mostly observed in scattered parties, perching on high trees, often among paddy fields, and it in general takes a much longer circuit than the

previous species before returning to its perch. I have often seen one seated on a low palisade, or stump of a tree overhanging a nullah, or back-water, every now and then picking an insect off the surface of the water.

They feed on wasps, bees, dragon-flies, bugs, and even on butterflies, which I have seen this species frequently capture. The flight of this Bee-eater is very fine and powerful, now dashing onwards with rapid strokes, and a velocity that can beat that of a dragon-fly, having captured which, it flaps along with more measured time, now and then soaring with outspread wing. The voice is a fine, mellow, rolling whistle. On one occasion I saw an immense flock of them, probably many thousands, at Caroor, on the road from Trichinopoly to the Neilgheries: they were perched on the trees lining the fine avenue there, and every now and then sallied forth for half an hour or so, capturing many insects, and then returning to the trees. These birds were probably collected there previous to migrating to their breeding quarters. They nestle like the last in holes in banks of large rivers. I have not seen in India any of these breeding haunts, but I have lately seen them breeding in thousands on the banks of the Irawaddy in Burmah, in April and May. It would be interesting to know if all the birds of this species that spread themselves over Southern India in the cold weather, retire to the wooded banks of this noble river to breed. Mr. Philipps, however, mentions that he found this species breeding "in an old rampart opposite my house" at Muttra, in the North-western Provinces; and it probably nestles in the banks of the Ganges and Jumna, though I have seen no record to that effect. (The same observer has a disquisition about the native names of the Bee-eaters, in which he confounds the species of *Phyllornis* with the true Bee-eaters.) In Lower Bengal, according to Mr. Blyth, this species occurs chiefly, or only, during the rainy season.

119. **Merops quinticolor**, Vieill.

Jerdon, Cat. 241—Horsf., Cat. 108—M. urica, Horsf.—Swainson, Zool. Ill., N. S. pl. 8—M. erythrocephalus, Latham—Blyth, Cat. 235.

The Chesnut-headed Bee-eater.

Descr.—Whole top of the head, nape, hind-neck, and upper part of back, rich chesnut; wing-coverts, interscapulars, and tertiaries, bright green, the latter tinged with blue; rump, and upper tail-coverts pale azure blue; quills dull green, tending to rufous on the inner web, and black-tipped; tail, with the centre feathers blue on the outer web, all the rest dull green, tipped dusky; tail even, or slightly emarginate, with the centre feathers not elongated; beneath, the chin, throat, and sides of the neck up to the ear-coverts, pale yellow, below which is a band or collar of ferruginous, edged with black; the breast bright green; abdomen, vent, and under tail-coverts the same, tinged with blue; wings within rufous-brown.

Bill black; legs and feet plumbeous; irides fine crimson-red.

Length $8\frac{1}{2}$ inches; wing $4\frac{5}{10}$; tail $3\frac{1}{4}$, 1 inch beyond end of wing; bill at front $1\frac{5}{10}$; weight 12 dwt.

This very beautiful Bee-eater, which is the type of the division *Urica*, Bon., is only found in forest-country, and is most abundant in elevated districts. It is found in the Malabar forests, and adjoining mountains. I have seen it on the Coonoor Ghaut of the Neilgherries up to 5,500 feet of elevation; and it is not uncommon in the Wynaad and other elevated wooded districts. I never saw it on the East coast, nor has it been sent from Central India. Blyth says that it is not found in lower Bengal, and it is not likely to occur in the North-western provinces. It extends, however, to Arrakan, Tenasserim, and Malayana. It pursues insects from its perch on a lofty tree, and generally returns after having captured one. It breeds in holes in banks generally, but not always close to water. I found a nest on the road side on the Coonoor Ghaut. It is stated to excavate a hole from 1 foot to 7 feet in depth, and to lay two to five eggs, white, as in others of this genus.

120. **Merops Ægyptius**, Forsk.

Horsf., Cat. 109—M. Persicus, Pallas—Blyth, Cat. 231—Descr. de l' Egypte, 1. pl. 4. f. 3

The Egyptian Bee-eater.

Descr.—Above, including wings and tail, green, mixed with verdigris-blue on the back, rump, and upper tail-coverts; forehead with a narrow line of yellowish-white, succeeded by a pale blue band, which continues over the eyes; a dark line through the eyes to the ear-coverts, which are mixed greenish, blue, and dusky; below this from the gape is another narrow white line, edged with pale blue; chin yellow; throat deep chesnut; rest of the lower parts blue-green; tail even, with the two centre tail-feathers elongated.

Length 12 inches; wing 6; tail $3\frac{1}{4}$ to end of the outer tail-feathers, barely $\frac{1}{2}$ inch beyond the end of the wing, middle ones $5\frac{1}{4}$; bill at front $1\frac{5}{8}$.

This Bee-eater occurs in Sindh, whence it was sent to the Museum at Calcutta by Sir A. Burnes. It is found throughout Persia, Arabia, Asia Minor, and Egypt, extending rarely to the South of Europe.

121. **Merops apiaster**, Lin.

Blyth, Cat. 230—Gould, Birds of Europe, pl. 59.

The European Bee-eater.

Descr.—Forehead pale whitish-blue; body above marrone-red, passing into rufous-yellow on the rump; a black eye-streak from the base of bill, through the eye, nearly meeting another black band which crosses the lower part of the throat; chin and throat rich yellow; wings blue-green, or greenish-blue, with most of the coverts and the secondaries chesnut, the latter black tipped, as are the primaries, though faintly; tertiaries blue-green; tail dull green, the tips of the centre feathers bluish; lower parts verdigris-blue. Bill black; legs brown; irides red.

Length $10\frac{1}{2}$ to 11 inches; wing $5\frac{3}{4}$; tail $3\frac{3}{4}$ to end of outer feathers, 1 inch beyond wing; bill at front $1\frac{1}{4}$.

The European Bee-eater, previously known to occur in Afghanistan, has been observed by Dr. Adams in great numbers in the valley of Cashmere, extending into the plains of the Punjab, and very abundant at Peshawar. It is chiefly a native of Africa, but

migrates to the south of Europe in spring to breed, which it does in holes in banks, laying several white eggs; and it is said to line its nest with the elytræ and legs of beetles. Either this or the previous species was observed by Burgess migrating in large numbers, half way between Bombay and Aden, on the 8th or 9th of May. Some of them were taken on board-ship.

The only other Bee-eater from the East is *M. badius* from Malacca: one species occurs in Australia, and there are many in Africa. Some of these form a peculiar genus, *Melittophagus*, distinguished by their short wings, and more or less emarginate tail.

Gen. NYCTIORNIS, Swainson.

Syn. *Bucia*, Hodgson, postea *Napophila*; *Alcemerops*, Geoff.

Char.—Bill moderately long, well curved, strong, compressed, ridge flattened towards the base, with a parallel groove on each side; nostrils concealed by setaceous feathers; wings moderate, full, rounded, 4th quill longest; tail longish, nearly even; feet short, much as in *Merops*. Plumage lax, soft and dense, with a plume of long stiff pectoral feathers, differently coloured.

This genus chiefly differs structurally from *Merops* in its shorter and rounder wing. Two of the known species have finely coloured elongated plumes on the throat and breast. The Indian one possesses a cœcum 1 inch long, according to Hodgson It has also a long tongue, slightly brushed at the tip.

122. **Nyctiornis Athertoni**, JARD. and SELBY.

Merops, apud J. and S., Ill. Orn. I. 58—BLYTH, Cat. 228—HORSF., Cat. 111—N. cæruleus, SWAINSON—M. amherstiana, ROYLE—Bucia nipalensis, HODGSON—Merops cyanogularis, JERDON, Cat. 242—Napophila meropina, HODGS.—*Bukay Chera*, Nepal—*Sangrok pho*, Lepch.

THE BLUE-NECKED BEE-EATER.

Descr.—General colour bright vernal green, shaded on the belly and vent with buff; forehead blue; gular hackles rich ultramarine-blue, formed of a double series of long, drooping plumes, ranged opposite each other on either side of the median line; lining

of wings, the wings internally, under tail-coverts, and lower surface of the tail, buff.

Bill bluish-plumbeous, with black tip; legs and feet dusky greenish; irides deep yellow.

Length 14 inches; extent 18; wing $5\frac{1}{2}$; tail 6, $3\frac{1}{2}$ inches beyond wing; bill at front $1\frac{1}{2}$ to $1\frac{3}{4}$; tarsus $\frac{6}{10}$; weight $3\frac{1}{4}$ oz.

This fine bird is found in the large and lofty forests of India. I have found it in Malabar in several localities; well up the sides of the Neilgherries at least to 3,000 ft.; in the Wynaad jungles; and, on one occasion, on the Nackenary pass, leading from the Carnatic into Mysore, at about 1,400 ft. It does not appear to occur in Central India, but is not rare all along the Himalayan range, from the Deyra Doon to Assam, Arrakan, and Tenasserim. I got it at Darjeeling, at about 4,000 ft. high.

It is generally solitary; perches on high trees, whence it sallies forth after its insect prey, which it seizes on the wing, and then returns to its perch, or sometimes passes on to another tree, wandering about a good deal. Its food is bees and wasps, also scarabæi, cicadæ, &c. In general, it keeps to the deeper part of the forests; but I saw it at Darjeeling on a dead tree, at the edge of a clearing. Hodgson says that "they are of dull, staid manners. In the Rajah's shooting excursions, they are frequently taken alive by the clamorous multitude of sportsmen, some two or more of whom single out a bird, and presently make him captive, disconcerted as he is by the noise." I never heard its note, that I am aware of; but Captain Boys, as quoted by Gould, says, 'This beautiful bird has a peculiarly wild note, and is very difficult of approach.' It is stated by the natives at Darjeeling, that this bird makes its nest in a hole in a tree.

Swainson's name, *Nyctiornis,* was given to it from the information supplied to Sir W. Jardine, when he first described the bird, *viz.*, that it was partly nocturnal in its habits, and had a loud note, heard much at night. This is doubtless an error, and the call of the *Megalaima zeylanica* was probably mistaken for that of the *Nyctiornis.*

The other well-known species, *N. amictus*, from Malayana and S. Burmah, has the pectoral plumes of a beautiful peach-pink color,

more decomposed than in our bird. A third species from Africa is given in Bonaparte's Conspectus, *N. gularis*, from Africa; but that is now separated as *Meropiscus;* and the same ornithologist has a *Meropogon forsteni*, from Celebes, which, says he, combines the short wings of *Melittophagus*, the tail of *Merops*, and the bill and gular hackles of *Nyctiornis*.

The Motmots, MOMOTIDÆ, are an American group, with the aspect of the Bee-eaters; the bill, however, is stronger; the edges serrated; the tongue is barbed; the tarsus is longer; and the feet very syndactyle. They have short wings; live on fruit and insects; and nestle in holes in sand-hills. One species, at least, has a trace of the elongated breast-plumes of *Nyctiornis*.

Fam. CORACIADÆ, Rollers.

Bill moderate or rather long, strong, broad at the base, compressed towards the tip, which is hooked, and sometimes slightly notched; the gape is large, with or without rictal bristles; tarsus short, stout; feet moderate; toes free, or slightly syndactyle; wings moderate, or long, broad; tail variable, sometimes short and even, at other times with very elongated outer tail-feathers.

The Rollers are birds of rather large size, something resembling Jays in their general appearance, and are universally called Jays by Europeans in India. They are adorned, especially on the wings, with rich blue colors; are noisy and somewhat familiar birds; take their prey either on the ground, or on the wing; and usually breed in holes in trees. They are natives of Africa, Asia, and Australia; one species migrating to Europe to breed. The Rollers were formerly classed with the Jays, and are still kept among that group in Horsfield's Catalogue. Swainson, I believe, was the first author who pointed out their true affinities; and they are now, all but universally, allowed to belong to the fissirostral group, near the Bee-eaters. The sternum is doubly emarginate; the stomach membranous; and they have moderately developed cœca.

Gen. CORACIAS, Lin.

Char.—Bill large, moderately thick, lengthened, straight, strong, somewhat broad at the base, compressed towards the tip; culmen

sloping, hooked abruptly; the nostrils basal, oblique, linear, apert. Gape very wide, with strong rictal bristles; wings tolerably lengthened, the 2nd quill longest, or the 2nd and 3rd sub-equal; tail even or slightly rounded, short; tarsus stout, shorter than the middle toe; outer toe nearly free to the base, much longer than the inner toe; hind-toe shorter than the inner toe; tarsus and toes strongly scutate.

123. **Coracias indica**, Linn.

Pl. Enl. 285.—Sykes, Cat. 119—Jerdon, Cat. 243—Blyth, Cat. 224—Horsf., Cat. 856—C. bengalensis, L.—Garrulus nævius, Vieillot.—*Subzak*, *i. e.*, greenish bird, Hind; also *Nilkant*, H., *i. e.*, blue-throat (not blue crow, as Irby translates it).—*Tas*, Máhr., *Pálú pitta*, Tel., *i. e.*, milk bird.—*Katta-kade*, Tam.—*Towe*, Mhari—The *Jay* of Europeans in India.

The Indian Roller.

Descr.—Head above and nape dingy greenish-blue, the forehead tinged with rufous; hind-neck, scapulars, interscapulars and tertiaries, dull ashy-brown with a green gloss, and tinged with vinous on the hind neck; back blue; rump and upper tail-coverts deep violet-blue; lesser coverts and shoulders deep cobalt-blue; the other coverts dingy greenish-blue; the winglet, greater coverts, and quills, pale sky-blue, with a broad band of violet-blue on the middle of the wings, occupying the terminal half of the secondaries, and last two or three primaries; the first seven primaries tipped dark-blue; tail, with the two centre feathers, dull green; the others dark violet-blue, with a broad, pale blue band, occupying the greater part of the terminal half of the tail, and widening exteriorly; beneath, chin, throat, and breast, light vinous-purple, the feathers with pale fulvous shafts, passing into tawny isabella, with light streaks on the abdomen; lower abdomen, flanks, vent, and under tail-coverts pale blue; wings beneath entirely pale blue, with a broad violet band; bill dusky brown; legs dusky orange-yellow; irides dark red-brown; eyelids yellow.

Length $13\frac{1}{2}$ inches; extent 22; wing $7\frac{1}{4}$; tail 5, about 2 inches beyond end of wing; bill, at front, $1\frac{1}{8}$; tarsus 1.

The Indian Roller is distributed throughout the whole of India, from Ceylon* and Cape Comorin to the base of the Himalayas; towards the North-east of our limits it begins to disappear, and is replaced by the next species, and in the extreme North-west its place is taken by *C. garrula* of Europe and Western Asia. Adams asserts that it is also found in Ladakh and Tibet, and he ignores the existence of *C. garrula* in the North-west.

It frequents alike open jungles, groves, avenues, gardens, clumps of trees in the open country, and, except inthick forest, is to be found everywhere, and is sure to be met with about every village. It generally takes its perch on the top, or outermost branch, of some high tree, and, on spying an insect on the ground, which it can do at a very great distance, it flies direct to the spot, seizes it, and returns to its perch to swallow it. A favourite perch of the Roller is a bowrie pole, or some leafless tree whence it can see well all around; also old buildings, a haystack, or other elevated spot; sometimes a low bush, or a heap of earth, or of stones. When seated it puffs out the feathers of its head and neck. I have, on several occasions, seen one pursue an insect in the air for some distance, and when the winged termites issue from their nest after rain, the Roller, like almost every other bird, catches them on the wing. It flies in general with a slow, but continued, flapping of its wings, not unlike the Crow, though more buoyant; but it has the habit of occasionally making sudden darts in the air in all directions. Its food is chiefly large insects, grass-hoppers, crickets, mantidæ, and even beetles; occasionally a small field-mouse, or shrew. It is often caught by a contrivance, called the *Chou-gaddi.* This consists of two thin pieces of cane, or bamboo, bent down at right angles to each other to form a semicircle, and tied in the centre. To the middle of this the bait is tied, usually a mole cricket, sometimes a small field mouse, *(Mus lepidus)*; the bait is just allowed tether enough to move about in a small circle. The cane is previously

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* *Cabanis* gives the Ceylon bird as distinct from the continental one, keeping *Indicus* for the former and *Bengalensis* for the latter bird; but as his specimen of *Bengalensis* is from Nepal, he has perhaps got a hybrid between this and *affinis*.

smeared with bird-lime, and it is placed on the ground, not far from the tree where the bird is perched. On spying the insect moving about, down swoops the Roller, seizes the bait, and on raising its wings to start back, one, or both, are certain to be caught by the viscid bird-lime. By means of this very simple contrivance, many birds that descend to the ground to capture insects are taken, such as the King-crows (*Dicruri*), common Shrikes, some Thrushes, Fly-catchers, and even the large Kingfishers (*Halcyon*).

The Roller has a very harsh grating cry or scream, which it always utters when disturbed, and often at other times also. Mr. Blyth states that in spring the male has a pleasing dissyllabic cry, repeated at intervals: this I cannot say I have heard. As previously mentioned, it is often selected as the quarry for the *Turumti* Falcon (*Falco chicquera*), and its extraordinary evolutions to escape the hawk, and its harsh cries, are noticed under the description of that falcon.

It breeds towards the end of the hot weather and beginning of the rains, in holes of trees, old walls, old pagodas, laying three or four round rather pure white eggs. Tickell says that they are four or five, full deep antwerp-blue. In this case a Myna's eggs were probably brought to him, as that bird builds in similar places, and its eggs are blue. What eggs Layard can have got as those of the Roller I am at a loss to imagine; he describes the eggs as greenish, profusely speckled with dark brown spots, taken from hollow trees. Captain Irby says that it breeds in the roofs of houses in Oudh, as well as in holes of trees, and that it sometimes makes a hole for its nest in the thatch of bungalows. I have not seen it so familiar in the south of India, but Adams also states that it breeds in the thatch of bungalows, and in chimneys. Does not he refer to the *Coracias garrula?* It is very quarrelsome and pugnacious in the breeding season.

The *Nilkant* is sacred to Siva, who assumed its form; and at the feast of the Dasserah, at Napgore, one, or more, used to be liberated by the Rajah, amidst the firing of cannon and musketry, at a grand parade attended by all the officers of the station.

Buchanan Hamilton also states that before the Durga Puja, the Hindoos of Calcutta purchase one of these birds, and at the time when they throw the image of Durga into the river, set the *Nilkant* at liberty. It is considered propitious to see it on this day, and those who cannot afford to buy one, discharge their matchlocks to put it on the wing. The Telugu name of the Roller, signifying Milk-bird, is given because it is supposed that when a cow gives little milk, if a few of the feathers of this bird are chopped up and given along with grass to the cow, the quantity will greatly increase. It is one of the birds on whose movements many omens depend. If it cross a traveller just after starting, it is considered a bad omen.

124. **Coracias affinis**, McLelland.

P. Z. S. 1839—Gray's Illustrated Genera of Birds, pl. 21—Blyth, Cat. 225—Horsf., Cat. 857.

The Burmese Roller.

Descr.—Head above dusky greenish-blue; back of neck, upper back, scapulars and tertiaries, dusky-greenish; lower back purplish-blue; upper tail coverts bright cærulean; the two middle tail-feathers dull-green; all the others rich purple at the base, tipped with pale blue, most broadly so on the outermost feathers; wings with the smaller coverts purple, the greater coverts of primaries, and winglet, shining pale blue; those of the secondaries dull greenish-blue, purplish at base; quills rich purple; the first five quills with a broad band of pale blue near the tip, which is dark; the secondaries, and the last five or six primaries, with a band on the outer web near the middle, also pale blue; lores, cheeks, ear-coverts, throat and breast, purplish, mixed with brown; the middle of the abdomen vinous-rufescent, with a purplish tinge; the lower belly, vent, thigh-coverts, and under tail-coverts, pale blue, partially mixed with purple, which predominates on the flanks.

Bill black; legs dirty yellow; irides red brown. Length 13 to 14 inches; extent 24; wing 8; tail $4\frac{1}{2}$ to $4\frac{3}{4}$, about 2 inches beyond wing; bill at front $1\frac{3}{8}$.

This species chiefly differs from the Indian one in the upper parts being greener; the neck and breast without any reddish-brown, being dusky-purplish, varied with bright purple; and in the wing being deep purple; it also wants the broad terminal purple band to the tail.

The Burmese Roller is the only one found to the east of the Bay of Bengal, and in Assam, but it spreads into the Sunderbuns, Tipperah, and even the neighbourhood of Calcutta itself, where it mingles and interbreeds with the Indian Roller. Blyth has procured many specimens, which present every gradation of plumage from one to the other. The same intermingling of affined species takes place in the Green Pigeons of the south and north of India, and in several other birds. It does not differ in its habits or voice from the Indian Roller; those which I saw in Burmah were decidedly more wary and less familiar than the Indian bird.

125. **Coracias garrula**, Lin.

Gould, Birds of Europe, Pl. 60—Horsf., Cat. 853—Blyth, Cat. 223.

The European Roller.

Descr.—The whole head, neck, and lower parts, pale blue, duller on the head, brighter on the chin and throat, and streaked pale; back, scapulars, and tertiaries, chesnut-bay; shoulder and lesser coverts violet-blue; the greater coverts pale blue; quills deep violet-blue; the lower part of the back violet-blue; upper tail-coverts light blue; tail, with the two centre-feathers, dull ashy-blue, the others pale azure, dull dark blue at their base, which color increases in extent towards the centre; the two outer feathers are tipped with dark blue; bill blackish; irides red-brown; feet yellow-brown.

Length 13 inches; wing 7¾; tail 5, not 2 inches beyond wing; bill at front 1⅜; tarsus barely 1. The European Roller is only found, in our province, in the extreme North-west; and even there (it would seem) but rarely. It has been taken at Moultan, and in other parts of the Punjab, also in Cashmere.

It is common in Western and Central Asia, and Northern Africa, and is said to breed usually in holes of trees, but sometimes in holes in river banks, laying two pure-white eggs. Pallas says that, in Central Asia, it feeds chiefly on beetles, and often fights with the Magpie. *Cor. Temminckii*, V., is found in Celebes and New Guinea; and there are several species of this genus in Africa, some of them with lengthened outer tail-feathers.

Gen. EURYSTOMUS, Vieillot.

Syn. *Colaris*, Cuvier.

Char.—Bill much shorter than in *Coracias*, wide at the base, abruptly curved at the tip, where it is compressed; nostrils long, narrow, slightly oblique; no rictal bristles; gape wide; wings very long, 2nd quill longest, 1st nearly as long; tail moderate, even; tarsus short; toes with the outer toe slightly syndactyle, hallux small; claws rather small.

126. **Eurystomus orientalis**, LIN.

Coracias, apud LINNÆUS—BLYTH, Cat. 226—HORSF., Cat. 148—E. cyanicollis, VIEILLOT—E. calornyx, HODGSON—Pl. Enl. 619.

THE BROAD-BILLED ROLLER.

Descr.—Head above, with lores, cheeks, and ear-coverts, deep fuscous-blue; chin and throat also blue, the latter with some longitudinal streaks of shining violet-blue; the greater wing-coverts bluish; primary coverts dark blue; quills dark violet with a pale blue band on the first six quills; tail uniform dark violet: the whole of the rest of the body dingy bluish-green, tinged paler and of a verdigris hue on the abdomen. Bill deep red; eyelids red; feet dull red.

Length 12 to 13 inches; wing 8, reaching to end of tail; tail $3\frac{3}{4}$; bill at front $\frac{7}{8}$; tarsus $\frac{5}{8}$. The young bird wants the blue of the head and throat, and is duller in all its tints.

This handsome Roller is found at the base of the Himalayas, in Lower Bengal, Assam, and the Burmese countries, extending to Ceylon, Malayana, and China. It has not yet been met with in Southern India; but I heard of a species of Roller which my Shikarees

called the *Pindarya nilkant*, which could have been no other than this bird. It was said to visit Central India, occasionally, in the cold weather. This Roller is stated to take its prey more on the wing than the common Rollers, and keeps much to the thick and lofty forests, though occasionally found in well-wooded regions, as about Calcutta. Layard says that it clings to trees like a Woodpecker, and that he saw it tearing away the decayed wood round a hole in a dead tree. "Their stomachs were," says he, "full of wood-boring Coleoptera, swallowed whole, merely a little crushed; and I saw them beat their food against the trees." These are rather anomalous habits for a Roller.

Gould remarks, of the very closely allied species from Australia, *E. pacificus*, that it captures insects on the wing from its perch on a tree, and that he always found Coleoptera in its stomach. He further states that it is a noisy bird, and breeds in holes in trees. In confinement it eats plantains greedily, and, probably, in its wild state, does so at times.

Besides *E. pacificus*, already alluded to, there is another species, *E. gularis*, V., from New Guinea; and two or three species from Africa and Madagascar, one or more of them approaching in colouring to the *Halcyon coromandelianus* (p. 227). The only other birds put in this family belong to the genus *Brachypteracias*, containing two or three species, from Madagascar, and these are doubtfully Rollers.

Fam. HALCYONIDÆ, Vigors, King-fishers.

Bill very long, stout, angular, straight, pointed, broadish at base, acute at tip; gape wide; rictus smooth; wings moderate, rounded; tail usually short; tarsus and toes very small, feeble, the latter much syndactyle, especially the outer one to the middle; one toe sometimes wanting.

The Kingfishers are a well-known tribe, found in all parts of the world; most of them diving in the water for small fishes, others eating crabs, insects, and reptiles. They sit motionless and watch for their prey, generally from a fixed perch; one or two questing a good deal on the wing. Their flight is rapid, with quickly repeated flappings, but cannot be long sustained,

like that of the Bee-eaters. They breed in holes in banks, and lay several rotund white eggs; sometimes placed, as has lately been ascertained, on a mass of fish-bones. They are noisy birds; most of them having a harsh, screaming call. The head is large, and the body stout and muscular: the tongue short; their stomach membranous; and the intestines long and slender, without cœca. The sternum has two emarginations on each side.

Some naturalists, as Swainson, Gray, and others, include in this family the *Bucconidæ*, or Puff-birds of South America, and the *Galbulidæ*, or Jacamars; and they are certainly very closely allied, as well in structure as in habits, and might be well associated with the Kingfishers in a philosophic arrangement: but I shall keep them distinct here, and give a brief sketch of their leading features at the close of the family.

Many curious fables and superstitions are attached to the Kingfisher, as well in modern as in ancient times; and 'Halcyon days' are still proverbial. The common Kingfisher, if hung up in a closed room, was supposed to point its bill or breast always to the wind, and even to show the flow and ebb of the tide; and the Tartars of Northern Asia wear its dried skin, as an amulet to secure good fortune.

Sub-fam. Halcyoninæ.

Mostly of large size; bill strong, thick, broad at the base, straight; culmen slightly inclining at the tip; gape smooth; wings short, broad. They are peculiar to the Old World division of the globe, with Australia and the islands.

Gen. Halcyon, Swainson.

Bill long, straight, deep, and broad, somewhat quadrangular; culmen, in some, inclining towards the tip, near which the margin is slightly sinuated; lower mandible angulated; gonys ascending towards the tip; wing rather short, 3rd quill longest, 4th and 5th nearly equal; tail short, rounded, or even; feet with the outer toe nearly as long as the middle toe, syndactyle for more than half its length; scales of the tarsus obsolete.

This genus comprises the large, stout-billed Kingfishers, some of which are not always found near water, but feed on crabs, grasshoppers, and other insects. It has been sub-divided, of late, into several subgenera, which I shall not adopt here, but indicate the natural groups to which the Indian species appear to belong. All appear to have red bills.

1st.—ENTOMOTHERA, Horsfield.

This division comprises the largest of the group; the bill has the groove of the upper mandible strongly marked for two-thirds of its length; the culmen is flattened, and the gonys is straight at the base, inclining upwards towards the tip. The two Indian members of this group are both quite aquatic in their food and habits, so the name is not very appropriate.

127. **Halcyon leucocephalus**, GMEL.

Alcedo, apud GMELIN—BLYTH, Cat. 199—HORSF., Cat. 151—H. gurial, PEARSON—H. capensis, L., apud JERDON, Cat. 245, and subsequently H. brunniceps, 2nd Suppl., Cat. 245—H. Javana, GRAY—*Gurial*, Beng.—*Male-poyma*, Mal.

THE BROWN-HEADED KINGFISHER.

Descr.—Head, lores, cheeks, and hind neck in part, light olive or fulvous brown; the sides and lower part of the back of the neck buff; lower part of the hind-neck and scapulars dingy brownish-green; the wing-coverts, quills, the sides of the lower part of the back, upper tail-coverts, and tail dull bluish-green; the primary quills tipped dusky black, and the inner webs of all dusky; the back, from the shoulders to the rump light silky azure-blue; chin and throat pale yellowish-white, passing into the buff of the sides of the neck; rest of the lower plumage orange-buff, deepest on the flanks. The young has the buff of the lower parts edged with brown, and the colors generally duller

Bill dark blood-red; legs dull scarlet; irides light brown.

Length 16 inches; extent 22; wing 6; tail 4, exceeding the wings by nearly 3 inches; bill at front $3\frac{1}{4}$, at gape 4; weight $7\frac{1}{2}$ oz.

This large Kingfisher is found over all India, from the extreme South, and Ceylon, to Bengal; but only is general where there is much jungle or forest, or where the banks of rivers are well wooded. It is common in Malabar; rarely seen in the Carnatic and upon the Table Land; occasionally found in Central India and the Northern Circars; and most abundant in Bengal, but apparently not found, or rare, in the North-west. It extends likewise to all the countries east of the Bay of Bengal, even to the islands of Malayana, but varying slightly from the peninsular bird.

All specimens from India, that I have seen, are uniformly brown on the head: those from the East, and especially from Tenasserim, have the cap albescent or whitey-brown, but never white, as the Gmelin's name would imply: hence, in accordance with Sundevall, who also distinguished it from the Malay bird, I formerly named it *H. brunniceps*. This has been disallowed as a distinct species; every degree of gradation, it is stated, being observable. Those from Malacca, again, *H. capensis*, L., apnd Bonap., are smaller, with the blue more pronounced and deeper on the wings and tail, the lower plumage also deeper in tint, and the brown of the head moderately dark, having a distinct metallic shine. These form three distinct races, to say the least; and, if they should eventually be allowed as species (as indeed Bonaparte ranks them), the Indian should retain Pearson's specific name, *Gurial*.

Our bird is found along rivers, streams, and back-waters; but only where tolerably well shaded by trees. It sits on a branch overhanging the water, and pounces on fish, crabs, and occasionally frogs. It has rather a peculiar call *(peer peer pur)*, several times repeated. Layard, however, calls it a loud, harsh note, not unlike the cracking of castanets.

It is said to build in hollow trees, or in holes in mud-walls. Mr. Smith, as quoted in Horsfield's Catalogue, says that he once observed a contest between a bird of this species and a Hawk of considerable size, in which the latter was worsted and obliged to leave his hold, from the effects of a severe blow which the other administered to him on the breast.

128. **Halcyon amauropterus**, Pearson.

J. A. S., X, 635—Blyth, Cat. 1824—Horsf., Cat. 152.

THE BROWN-WINGED KINGFISHER.

Descr.—Whole head, neck, and lower parts, deep ochreous-fawn or buff, the feathers tipped brownish: wings and tail, sides of back, and sides of the upper tail-coverts, dusky hair-brown, with a slight gloss of green; whole middle of back, and of the rump, and the upper tail-coverts, in part, bright pale cærulean-blue.

Bill deep crimson; legs scarlet; irides brown.

Length 14 inches; extent 16; wing $5\frac{1}{4}$; tail $3\frac{1}{2}$, exceeding the wing by $2\frac{1}{2}$ inches; bill at front $2\frac{3}{4}$; tarsus not $\frac{5}{8}$.

This is a handsomely colored species; the beautiful pale sky-blue contrasting so effectively with the brown and sober tints of the rest of the plumage. It is only found within our limits, in Bengal, being not rare about Calcutta, though more common in the Sunderbuns, where I have frequently seen it; and it is more abundant still to the East, in Arrakan and Tenasserim. It does not appear to ascend rivers, in Bengal, far beyond the reach of the tide. It is a noisy species, and has a very loud, harsh, and grating cry. It feeds chiefly on fishes, making a violent plunge into the water.

2nd.—CANCROPHAGA.

In this division, the bill is wide at the base; the culmen not flattened, and the gonys is inclined upwards nearly from the base. Some of the birds of this group feed a good deal on insects and crabs; others are more piscivorous.

129. **Halcyon fuscus**, Bodd.

Alcedo fusca, Boddaert—Pl. Enl. 849—H. Smyrnensis, Sykes, Cat. 32—Jerdon, Cat. 254—Blyth, Cat. 201—Horsf., Cat. 155—*Kilkila*, Hind.—*Sade-buk match-ranga*, Beng.—*Lak muka*, also *Buche-gadu*, Tel.; *Vichuli*, Tam.

THE WHITE-BREASTED KINGFISHER.

Descr.—Head, face, sides of neck and body, abdomen, and under tail-coverts, deep rich brown-chesnut; scapulars and

tertiaries dull greenish-blue; back, rump, and upper tail-coverts, bright cærulean blue; wings, with the lesser coverts, chesnut, median coverts black, and the greater coverts and winglet, dull blue; quills blue, with a broad, black tip, diminishing to the last primary, and the inner webs of all dusky black, with a broad oblique white bar on the inner webs of the primaries, extending over nearly the whole feather in the last primary, small in extent on the first; chin, throat, middle of the neck, breast, and abdomen, pure white; tail blue, the centre feathers slightly tinged with greenish.

Bill rich coral-red; feet vermilion-red; eyes brown.

Length $10\frac{1}{2}$ inches; wing $4\frac{1}{2}$ to $4\frac{3}{4}$; tail 3, exceeding the wings by about $1\frac{1}{2}$ inch; bill at front $2\frac{1}{4}$.

This well-known Kingfisher is very abundant in most parts of India, and is found throughout the whole peninsula and Ceylon, up to the base of the Himalayas, and extending through all the countries to the east, as far as China.*

It prefers a wooded country, but is not found in thick forests; and is to be met with about most large villages and cantonments. It frequents banks of rivers and brooks, edges of tanks, as also the neighbourhood of wellsand wet paddy-fields; but it is as frequently found away from water, in groves of trees, gardens, open jungle, and dry cultivation; perching upon trees, poles, walls, oldbuildings, and any similar situation. Here it watches for a land-crab, mouse, lizard, grasshopper, or other insect; and pounces down on it, returning to its perch to devour it. Near water it catches fish (for which it sometimes though rarely dives), frogs, tadpoles, and water-insects. Layard states that he has seen it seizing butterflies. It has a loud, harsh, rattling scream, which it almost always utters when flying. It is stated to build its nest sometimes under a projecting stone on the bank of a nullah; sometimes in a hole in a bank; at other times in holes in decaying trees; and to lay from 2 to 7 round fleshy-white eggs.

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* A very nearly allied species is *H. gularis*, Kuhl, *albogularis*, Blyth, from the Philippines.

It was long considered that this bird was identical with the species found in Asia Minor, and named *Smyrnensis* by Linnæus; but Mr. Strickland, from specimens procured near Smyrna, showed them to be distinct. Parties of Burmese occasionally visit India, to procure the skins of this and other Kingfishers: they are, it appears, in great request at the capital for the court dresses. Some are said to be exported to China, where the feathers of this and others are used as a foil to impart a rich color to glass ornaments.

130. **Halcyon Atricapillus**, Gmel.

Alcedo, apud Gmelin—Blyth, Cat. 204—Horsf., Cat. 153—A. pileata, Bodd.—Pl. Enl. 613—Jerdon, 2nd Suppl., Cat. 245 bis—A. brama, Lesson.

The Black-capped Purple Kingfisher.

Descr.—Head, lores, face, ear-coverts, and nape, black; whole upper parts rich violet-purple, brighter on the back and rump; wings with the coverts, except those of the primaries, black; quills tipped black, with a white wing-bar on the inner webs (as in *fusca*), and the inner webs of the rest black; chin, throat, and neck all round, white, with a tinge of fulvous; the middle of the breast and abdomen also white; rest of the lower parts, including the under wing-coverts, rich rusty.

Length 12 inches; wing $5\frac{1}{2}$; extent 19; tail $3\frac{1}{2}$, exceeding the wings by $1\frac{3}{4}$ inches; bill at front $2\frac{3}{8}$.

Bill deep red; legs red, with black marks; eye brown.

This fine Kingfisher is found but very rarely in India and Ceylon. I once obtained a specimen, which I shot myself, at Tellichery, on the Malabar coast; and I have seen others from the same locality. It is also rare in Bengal, but has been killed as high up the Ganges as Monghyr; it is more common, however, in the Sunderbuns, and on the Burmese coast, as far as the Malay peninsula and islands, extending eastward to China. It appears to prefer wooded countries near the sea, or mouths of large rivers. It is said to feed both on fish and on insects, and has a harsh crowing call.

3rd.—CALIALCYON.

In this group the bill is wide, less compressed at the tip; the groove is smaller, and the sides of the bill are slightly rounded; the gonys has a slight curve upwards for its whole length.

131. Halcyon Coromandelianus, SCOPOLI.

Alcedo, apud SCOPOLI—HORSF., Cat. 156—H. Coromander, BLYTH, Cat. 203—H. Schlegelii, BONAP.—H. lilacina, SW.—H. calipyga, HODGS.—*Sankyen pallang-pho*, Lepch.

THE RUDDY KINGFISHER.

Descr.—Above rufous, overlaid with beautiful shining peach-lilac, except on the forehead, face, top of the head, and quills; a narrow band on the middle of the lower back, and the rump, white, tinged with shining pale blue; beneath, the chin whitish, the rest of the lower parts ferruginous. Bill and legs red; irides brown.

Length $10\frac{1}{2}$ inches; wing $4\frac{1}{2}$; tail $2\frac{3}{4}$, $1\frac{1}{2}$ inch longer than wings; bill at front 2.

This lovely-colored Kingfisher is found along the foot of the Himalayas, in Nepal and Sikim; also in the Sunderbuns, and along the eastern coast of the Bay of Bengal. I much doubt if it has been found in the South of India, albeit named from the Coromandel coast. I obtained one specimen from the banks of the Teesta river in Sikim; and Mr. Blyth has seen it *en route* from Calcutta to Burdwan.

Other Eastern species of *Halcyon* are *H. cyaniventris*, V., from Java; *H. concreta* T., from Sumatra; *H. pulchella*, Horsf., from Southern Tenasserim, Malacca, and the islands; and there are two or three others from the more distant islands. *H. concreta* should perhaps rank in *Todiramphus*, and *pulchella*, by its hooked bill, is almost a *Dacelo*. Several species are peculiar to Africa.

Gen. TODIRAMPHUS, Lesson.

Bill shorter than in *Halcyon*, wider; the lateral groove almost obsolete, the gonys distinctly curving upwards; the wings lengthened, the 1st quill proportionally longer, and the 2nd nearly equal to the 3rd; the inner toe very short, almost wholly syndactyle.

This genus, though not admitted by Horsfield, is, I think, a very good one. To a peculiar form of bill is added a distinct style of coloration; and the group is Oceanic in its distribution, one species only coming to the Eastern edge of our province.

The bill, in most, is dark; whilst in true *Halcyon* it is red. The Australian members of the group are said to have the food and habits of *Halcyon*, and to breed in holes of trees.

132. **Todiramphus collaris**, Scop.

Alcedo, apud Scopoli—Horsf., Cat. 158—Swainson, Zool. Ill. t. 57—Blyth, Cat. 206—A. chlorocephala, Gmelin—A. sacra, Gmel.

The White-collared Kingfisher.

Descr.—Head, ears, and nape, dull bluish-green, darker on the ear-coverts and nape, forming a sort of collar, or coronet, slightly separated from the cap by some white feathers mixed with the others; upper back and scapulars blue-green; the lower back and rump bright pale blue; wings and tail blue, more dull on the coverts, and slightly tinged greenish; beneath, and a broad collar all round the neck, white.

Bill black, livid-reddish at the base beneath; irides red-brown; legs shining greenish-grey.

Length 9 inches; wing $4\frac{1}{4}$; extent 15; tail $2\frac{5}{8}$, $1\frac{1}{2}$ inch longer than wing; bill at front $1\frac{5}{8}$.

The young bird has the feathers of the breast, sides and back of the neck, edged with dusky, and the colors somewhat more dingy.

This Kingfisher is by no means uncommon in the Bengal Sunderbuns. It is also found in Arakan and along the Tenasserim coast, extending into Malayana and the Islands. It appears, like the others of this genus, to prefer the vicinity of the sea, or tidal rivers. A specimen, said to be from Madras, is in the Museum of the late E. I. C.; but I think it doubtful if it was procured on the Madras coast. It appears that the feathers of this species are much prized by the Chinese, who buy the skins at the rate of 24 for a dollar. Nothing is recorded of the habits of this bird.

Several species of this genus are found throughout Malayana, and the Islands, as far as Australia; one in the Nicobars; and they have a great general similarity of plumage. The genus *Dacelo* is chiefly Australian. It has a shorter bill than *Halcyon*, more like that of *Todiramphus*, and bent down at the tip; but it resembles *Halcyon* in its less aquatic habits, indeed some of them are emphatically birds of the desert, subsisting mainly on snakes and lizards, but breeding in holes of trees. One or two additional genera have been formed from *Dacelo*, and one of them *Tanysiptera*, is remarkable for its lengthened medial tail-feathers.

Gen. CEYX, Lacepede.

Char.—Bill as in *Halcyon*, large, wide, barely grooved; gonys inclined upwards; culmen flattish; tail very short; feet with only three toes, two in front, one behind, the inner toe being absent.

This genus is peculiar to India, Malayana, the Phillipine Islands, and New Guinea; and the species have the most beautiful and brilliant plumage of all the tribe. As far as is known, they are quite aquatic in their habits.

133. **Ceyx tridactyla**, PALLAS.

Alcedo, apud PALLAS—SYKES, Cat. 35—JERDON, Cat. 246—JERDON, Ill. Ind. Orn., Pl. 25—BLYTH, Cat. 220—A. erythaca, PALL.—A. purpurea, GMEL.—C. microsoma, BURTON.

THE THREE-TOED PURPLE KINGFISHER.

Descr.—Head rufous, with a lilac gloss, a violet spot behind the ear, and a white patch below that; a small dark blue patch at the base of the bill; interscapulars and wings deep blue; the quills black; back dark blue, with some lustrous blue streaks; lower back, rump, and upper tail-coverts, rich rufous, with a lilac shine on the middle; cheeks and lower parts ferruginous, paler on the lower belly; chin and throat white.

Bill fine coral-red; legs red; irides brown.

Length 5 to $5\frac{1}{2}$ inches; wing $2\frac{1}{4}$; extent 8; tail $\frac{3}{4}$, not quite $\frac{1}{2}$ inch shorter than wing; bill at front $1\frac{1}{4}$.

This very lovely species is scattered, though far from common, over all India, with Ceylon. Col. Sykes procured it in the Deccan; but it seems to be a coast bird, for the most part. I obtained it in Southern India; and it has been killed near Calcutta. It appears to be more common in Malayana. It feeds exclusively on small fish and aquatic insects.

Another species, *C. rufidorsa*, Strickland, has only been found in Malayana. Its colors much resemble those of *Halcyon Coromandelicus*. Two or three more occur in the Eastern islands; and that of the Phillipines (*C. luzoniensis*) is perhaps the most beautiful of them all. Another pretty group of small three-toed Kingfishers is found in Australia, and the neighbouring isles, *Alcyone*, Sw. These have the bill of *Alcedo*; and belong to the next sub-family.

Sub-fam. ALCEDININÆ.

Bill longer, more slender and compressed, acute, grooved near the culmen for the greater part of its length; gonys nearly straight.

This group contains the more typical Kingfishers, which live almost exclusively on fish or other aquatic food. It comprises species from all parts of the world, the American forming a particular section of the genus *Ceryle*.

Gen. ALCEDO, Lin. (in part.)

Char.—Bill long, slender, straight, compressed, tip acute; culmen sharp, carinated, not inclined; commissure straight; 2nd and 3rd quills sub-equal, 3rd slightly the longest, 1st very little shorter; tail very short, even; feet weak, inner toe very short, equal to the hind toe, both lateral toes syndactyle.

The species of this genus are spread over most of the Old World: they include the well known European Kingfisher.

134. **Alcedo bengalensis**, GMELIN.

SYKES, Cat. 34—JERDON, Cat. 247—BLYTH, Cat. 214—HORSF., Cat. 162—A. ispidioides, LESSON—Edw. Pl. 11—*Chota kilkila*, H.—*Chota match-ranga*, Beng.—*Nila buché gadu*, Tel.—*Ung-chim-pho*, Lepch, *i. e.* 'water Sasia.'

The Common Indian Kingfisher.

Descr.—Head and hind-neck dusky, the feathers edged with pale blue; a rufous band from the base of the nostrils to the end of the ear-coverts; below this a dark band, extending down the sides of the neck, followed by a white patch; scapulars dull green; back, rump, and upper tail-coverts, pale blue; wings and tail dull green-blue; the wing-coverts speckled with pale blue; quills dusky on their inner edges; chin and throat white; the rest of the lower plumage bright ferruginous. In young birds a bluish green tinge is the prevalent tint; in adults, a pure blue.

Bill blackish above, orange beneath; irides dark brown; legs orange red. Length $6\frac{1}{2}$ to 7 inches; wing $2\frac{3}{4}$; tail $1\frac{1}{10}$, $\frac{1}{2}$ inch longer than wing; bill at front $1\frac{4}{10}$.

This Indian Kingfisher, so nearly allied to the common European one, is spread throughout the whole of India, Ceylon, the Indo-Chinese region, Malayana, and even China. It is quite a diminutive of the European bird; and frequents rivers, brooks, tanks, irrigated paddy-fields, and ditches by the road side, perching on a tree or post, a stone, or a telegraph wire. It dives obliquely on its prey, which consists of small fish, tadpoles, and aquatic insects. It breeds in deep holes in banks of rivers; Buch. Hamilton states, also in mud walls, and that it lays 6 or 7 pinkish-white round eggs. Layard remarks that many are taken in Ceylon by a net placed under water, for sale in China.

I have seen specimens, in which there was a good deal of white on the head, back of neck, and back.

135. **Alcedo euryzona**, Temm.

Pl. Col. text— A. nigricans, Blyth, J. A. S. XVI, 1180, Cat. 212 (the young)—A. grandis, Blyth, J. A. S. XIV. 190, and Cat. 211 (the adult)—Horsf., Cat. 161—A. cærulea, Gmel., apud Bonap.

The Great Indian Kingfisher.

Descr.—Very like the last, the ground-color darker and more black, and the spots therefore appear brighter; the back and rump

very bright blue; the upper tail-coverts deep blue; lores with a black spot; the rufous band very faintly developed; ear-coverts mixed black and blue; a narrow white nuchal band meeting its fellow; the plumage beneath dark ferruginous.

Bill black, red at the base over the lower mandible; feet red. Length $8\frac{1}{2}$ to 9 inches; wing $3\frac{3}{4}$ to 4; tail $1\frac{7}{8}$; bill at front $1\frac{7}{8}$; tail 1 inch longer than wing.

This Kingfisher, chiefly found in Malayana and the Isles, has rarely been killed in Sikim. I did not myself see it on any of the rivers there. It is as much larger than the European Kingfisher, as that bird is than the common Indian one, and proportionally richer colored.

Other species of Alcedo, from the East, are *A. meningting*, from Tenasserim, Java, and Malacca; *A. beryllina*, also from Java; and *A. Moluccensis* from the Moluccas. A prettily crested group, peculiar to Africa, has been named *Corythornis* by Kaup. The restricted genus *Alcedo* has no representative in Australia.

Gen. CERYLE, Boie.

Syn. *Ispida*, Swains.

Char.—Bill long, straight, compressed, acute at tip; culmen obtuse, somewhat flattened, and margined on each side by an indented groove; tail slightly lengthened, rounded; wings long, 2nd and 3rd quills nearly equal; inner toe longer than the hinder one, which is very short.

These Kingfishers are birds of moderate or large size; those from India having black and white plumage, and the head more or less crested. Most of the species are fonnd in America; a few only in Africa and Asia.

136. **Ceryle rudis**, LIN.

Alcedo, apud LINNÆUS—SYKES, Cat. 33—JERDON, Cat. 248—BLYTH, Cat, 210—HORSF., Cat. 165—GOULD, Birds of Europe, Pl. 62—C. varia, STRICKLAND—Ispida bicincta, and I. bitorquata, SWAINS.—*Korayala kilkila*, *i. e.*, spotted Kingfisher, H.—*Phutka match-ranga*, Beng., also *Karikata*.

The Pied Kingfisher.

Descr.—Head and ears black, white-streaked, with also a white supercilium; back, rump, upper tail-coverts, and wings, black, white-edged; lower parts, and the sides of the neck, white, with a streak of black down the side of the neck from the ear-coverts; breast with a broad interrupted band of black in both sexes, and below this another complete but narrow band, in the male only; wings with a white band, formed by the bases of some of the quills, and the greater coverts; primary coverts and winglet black; tail white at the base, broadly black at the end, and tipped white.

Bill black; legs brown; irides dark brown.

Length 11 inches; extent 19; wing $5\frac{1}{2}$; tail 3, 1 inch or more longer than the wing; bill at front $2\frac{3}{10}$; tarsus $\frac{3}{4}$; weight 3 oz.

Mr. Strickland separated the Indian bird from *rudis*, stating that it had more white on the upper parts; but it is not generally allowed to be distinct. Indeed his *varia* appears to have been founded on a newly-moulted specimen, as contrasted with one having worn and abraded plumage.

This spotted Kingfisher is found over all India, Burmah, and Malayana; also Western Asia, Africa, and the south of Europe occasionally. It is very common and abundant on the banks of rivers, backwaters, and canals; also on the edges of tanks, and even of pools and ditches by the road side. Unlike the other Kingfishers, which watch for their prey from a fixed station, and then dart down obliquely on it, this one searches for its prey on the wing, every now and then hovering over a piece of water, and, on spying a fish, darting down perpendicularly on it, and rarely failing in its aim. Now and then, during its descent, it is baulked, and turns off from its swoop; but I never saw one plunge into the water and return without its prey. I cannot say that I have observed it stay so long under water as Pearson would imply, when he states that 'it plunges down, dead as a stone, into the water, and remains below it so long, that the ripple over the surface clears away some time before it comes up again.' Sundevall notices its holding its tail erect when sitting. It makes its nest in holes in banks of rivers.

137. Ceryle guttata, Vigors.

Alcedo, apud Vigors, P. Z. S. 1830—Gould, Cent. Him. Birds, Pl. 5—Blyth, Cat. 209—Horsf., Cat. 166—*Machi Bagh* of the Doon *i. e.,* Fish-tiger—*Ung kashyiu, i. e.,* Water-dog, Lepch.

The Large Crested Black and White Kingfisher.

Descr.—The whole head finely crested, the feathers long and narrow; the whole upper plumage a broad pectoral band, and a streak from the lower mandible down the sides of the neck, passing into the pectoral band, black with white spots and bars; the sides of the face, below the ears, from base of lower mandible, hind neck, and all the lower parts, white; the flanks and under tail-coverts, banded with black; under wing-coverts rusty, and the pectoral band and neck streak are sometimes also tinged with rusty brown.

Bill black; irides dark brown; legs brown-black.

Length 14 inches; wing $7\frac{1}{4}$; tail $4\frac{1}{2}$, $2\frac{1}{2}$ inches longer than wing; bill at front $2\frac{1}{4}$. The bill is short, thick, slightly curving towards the tip, deep, and blunt-pointed; the wings are shorter than in *rudis;* it is a somewhat different type from that bird, and has been named *Megaceryle,* by Kaup.

It has only been found in the Himalayas, frequenting wooded streams and rivers, and living exclusively on fish. It watches from a fixed perch, and darts down generally obliquely on its prey, not hovering, like its congener of the plains. I saw it near Darjeeling, up to 5,000 feet of elevation.

A nearly allied but larger species exists in Japan, *C. lugubris,* Schl.; and another in Africa. The remaining species of the genus are American, and by their coloration belong to a distinct group, *Streptoceryle,* Kaup.

The Bucconidæ, or Puff-birds, of America, have a large head; large, short, but stout bill; short tail, and dense sombre plumage. Their toes are in pairs. Some are sedentary, and frequent the thickest part of the forest; others take longer flights, which, in *Chelidoptera,* says Mr. Wallace, "almost vie with those of the Swallows for ease and rapidity." They live on insects, which they capture in the air; and they lay two white eggs in holes of trees,

or in banks of streams. They sometimes perch lengthwise on branches, clasping them with their first and fourth toes, directed sideways. Their anatomy somewhat resembles that of the Cuckoos.

The Jacamars (GALBULIDÆ), also peculiar to America, have a long sharp slender beak, straight or slightly curved; short feet, the toes in pairs, connected as far as the second joint. They have slight bodies, thin skin, and soft metallic plumage; catch insects in the air, and nestle in holes of trees. Wallace considers them intermediate to Trogons and Kingfishers, with the former of which, he says, they correspond precisely in habits; and they appear to unite the Kingfishers with the Bee-eaters.

Fam. EURYLAIMIDÆ, Swainson.

Syn. *Todidæ,* apud Horsfield.

Bill short, broad, depressed, with the culmen bluntly ridged, more or less rounded, and the tip hooked; margins of the upper mandibles somewhat dilated, and folding over the lower ones; nares basal, apert, or overhung by a few bristles or decomposed feathers; wings rather short; tail rounded or graduated; tarsus short, moderately stout; outer toe syndactyle as far as the second phalanx.

The Broadbills comprise a small group of birds from India, and especially Malayana, which some have united to the Todies of South America, but these apparently form a distinct family, differing in the form of the bill, which is lengthened; the nostrils are not basal, and both lateral toes are syndactyle. The real situation of the Eurylaimi, in a natural disposition of birds, is somewhat uncertain. Van Hoeven places them at the end of the *Caprimulgidæ;* Gray as a sub-family of *Coraciadæ;* and Bonaparte also locates them next to the Rollers. Horsfield joins them with the Todies, to form a distinct family of the *Fissirostres.* Swainson removes them from this tribe to the Flycatchers; and Blyth and Wallace class them with the *Pipridæ* or *Ampelidæ.* The latter author states that, in removing them from the Fissirostres, he relies chiefly on the character of their feet, which are somewhat stronger, and have the hallux larger than is usual among fissirostral birds; and he further says that those which he has had an opportunity of observing, do not

capture insects on the wing, but pick ants, and small Coleoptera, off the bark and leaves of trees. He further insists on their strong skins, and firmly-set plumage, as additional proofs against their being a fissirostral group; but this argument would equally apply to the Rollers, Bee-eaters, and other acknowledged fissirostral types.

On the other hand, we have undoubted resemblances to many birds of this tribe. The bill of some is most remarkably like that of *Batrachostomus;* and of others, like that of *Eurystomus;* and their feet are not so strong as in the Rollers, and more syndactyle. Their habits are not fully known, but, as far as they are, they agree with those of many of the tribe; and a review of their whole characters, the gay plumage of some, the Podargus-like bill of others, and the nidification, as observed by myself, warrant, in my opinion, their arrangement here; a view, indeed, adopted by most of our modern ornithologists. They very probably, however, form a link or transition to the Dentirostral group, through the *Ampelidæ.* We have only two representatives of this family in our province, both confined to the Himalayas.

Gen. PSARISOMUS, Swainson.

Syn. *Raya,* Hodgs.

Bill moderate, broad, deep, triangular as seen from above, strongly curved on the culmen, with a strong blunt ridge, and considerably hooked and notched at the tip; under mandible shallow; nostrils small, basal, apert; wings rather short or moderate, slightly rounded; tail long, graduated.

138. Psarisomus Dalhousiæ, JAMESON.

Eurylaimus, apud JAMESON, Ed. Ph. J. XVIII.—ROYLE, Ill. Bot. Him. Pl. 7. f. 2—BLYTH, Cat. 1181—HORSF., Cat. 143—Crossodera, apud GOULD, Icon. Pl. 7—E. psittacinus, MÜLLER, TEMM. Pl. Col. 297—Raya sericeo-gula, HODGSON, J. A. S. VIII., 36—*Ra-i,* in Nepal.—*Manki pho,* Lepch.

THE YELLOW-THROATED BROADBILL.

Descr.—Above, the head and hind neck black, with a blue spot on the middle of the crown, and a small yellow patch behind

the eyes, bordered by a pale yellow line, which encircles the forehead, and extends through the lores, under the ears, sides of neck, and hind neck, not quite meeting behind, being separated by a small blue patch on the middle of the nape; the rest of the plumage above bright parrot-green; quills with their outer webs pale blue for the greater part, forming a conspicuous blue wing-spot, dull blue green at their tip; the inner webs dusky black, with a white spot on some of the outermost feathers; secondaries dull green; winglet black; tail blue; the outer feathers greenish-blue, and the inner webs of all dusky; beneath, chin, throat, and upper part of the neck, pale silky yellow; the rest of the lower parts bluish-green; under surface of wings and tail dull blackish.

Bill green, with the culmen black; orbitar skin yellow; irides brown; legs and feet dull greenish-yellow.

Length 14 inches; wing 4; extent 13; tail $5\frac{1}{2}$; bill at front $\frac{3}{4}$; breadth $\frac{5}{8}$; height $\frac{7}{10}$; tarsus 1.

This beautiful bird is found throughout the Himalayas, from a low level to above that of 6,000 ft.: also in Assam, Burmah, and apparently parts of Malayana, if Müller's bird be correctly identified with the Himalayan one. I found it about 4,000 ft. or so, near Darjeeling; but it is by no means a common bird there. It frequents the densest parts of the forests, flying from tree to tree, solitary or in pairs. I did not observe it capturing insects on the wing, but I found, on examination, that it had eaten locusts and cicadæ.

The nest and eggs were once brought to me. The former was a rather large structure of moss and grasses, loosely put together, and was said to have been placed in a hole in a tree. The opening of the nest had apparently been at the side, but it was so much damaged by being pulled out of the hole, and was so little coherent, that I could not exactly ascertain this point. The eggs were two in number, and white.

This is the only species of the genus.

Gen. SERILOPHUS, Swainson.

Syn.—*Raya*, postea *Simornis*, Hodgson.

Bill very similar to that of the last, but smaller, moredepr essed, and shallow; the culmen less ridged, and the tomiæ less scarpt;

wings moderate, the secondaries emarginate at their tips, the 3rd and 4th quills equal and longest; tail short, rounded, the tips ending in soft slender points; tarsus moderate; toes very slender; otherwise as in the last.

The head is somewhat crested, and the first four primaries have slender points to the tips of the feathers.

139. **Serilophus rubropygia**, Hodgson.

Raya, apud Hodgson, J. A. S. VIII. 36—Blyth, Cat. 1183—Horsf., Cat. 145—*Ra-i-suga*, Nepal.—*Lho rapnun pho*, Lepch.

The Red-backed Broadbill.

Descr.—Head, nape, back of neck, upper back, and wing coverts, dusky slaty blue-grey, tending to olivaceous on the back; the lower part of the back, upper tail-coverts, and tertiaries, deep chestnut; a band, from the eyes to the nape, black; quills and tail black, the former with a blue spot on the primaries, and the inner webs of the same with white spots; the first four quills also tipped with blue and white, the others tipped blue on the outer web, with a white spot, and chestnut on the inner web; all the tail feathers, except the two centre ones, broadly tipped with white; beneath pale grey, albescent towards the vent; a demi-collar of shining white on each side of the neck, not always conspicuous; tibial feathers black.

Bill soft blue; orbitar skin yellow; irides brown; legs yellowish-green; nails bluish. Length $7\frac{1}{4}$ inches; wing $3\frac{1}{2}$; extent 11; tail 3; bill at front $\frac{9}{16}$; width $\frac{3}{8}$; tarsus $\frac{7}{8}$.

This chastely-colored Broadbill is found only in the Eastern Himalayas, from Nepal to Bootan, extending through Assam and Sylhet, to Arrakan. It is very closely related to *S. lunatus*, from Burmah. Some specimens from Nepal appear to want the narrow lateral frill of shining white; but those I got at Darjeeling had it distinct, though narrow. It is by no means a common bird, and I had no opportunity of observing it myself. The only specimen I procured fresh, had eaten various insects.

S. lunatus is stated to live on fruit and berries; and Dr. Helfer, as quoted by Horsfield, says that he observed these birds in societies of thirty to forty, upon the loftiest trees of

the forests, in Tenasserim; and that they are so very fearless that the whole flock can be shot down, one after the other. These habits are certainly unusual in birds of this family; and, I think, require confirmation.

The other types of this small, but highly interesting, family are *Eurylaimus javanicus*, and *E. ochromelas*, from Burmah and Malayana; *Corydon sumatranus*, from Burmah and the Isles, in which the bill is developed to its greatest extent, and approaches closely to that of *Podargus; Cymbirhynchus macrorhynchus*, also a large-billed bird from Tenasserim and Malayana; and the nearly allied, but smaller, *C. affinis*, from Arrakan. The former of these species is said to build a globular nest, suspended from the branches of trees growing directly out of the water, and the eggs are said to be pale blue. This I consider to be in great need of confirmation. *Peltops Blainvillii*, from New Guinea, is another allied race. *Calyptomena viridis*, of Malacca and the Isles, is a bird which presents considerable affinities with *Rupicola* of South America, belonging to the *Ampelidæ*. It is usually classed with the *Eurylaimi*, but differs a good deal from the previously-noticed members of this family, and has been placed in a separate sub-family by Bonaparte. *Smithornis*, Bon. of S. Africa, founded on *Platyrhynchus capensis*, A. Smith, is placed, by Bonaparte, in this family.

The Todies (TODIDÆ,) of S. America, consist of a single genus, *Todus*, of small size and green plumage, with an elongated flat-bill, which, by its habit of excavating a hole in a bank to deposit its eggs, and other points, shows an affinity to the Kingfishers.

Fam. BUCEROTIDÆ, Hornbills.

Bill enormous, arched or curved, often with an appendage or casque on the upper mandible; nostrils small, at the junction of the casque with the bill, or near the culmen, when there is no casque; wings short, rounded; tail long, of ten feathers; tarsus short, stout; feet moderately large, syndactyle; hind-toe short; claws short, thick, well-curved.

The Hornbills are a group of birds distinguished, at first sight, by the enormous size of their bills, which are further, in

most of the species, increased by a casque, or protuberance, placed at the base of the bill on the culmen, and occasionally as large as the bill itself; this is generally hollow or cellular internally, said to be heavy and solid in *B. galeatus*. The bill itself is almost always arched, tolerably wide at the base, and more or less dilated, acute at the tip, often irregularly serrated, or denticulated on the margins. In youth the margins are more regularly serrated, but the edges get broken off and irregular with age; and so much so about the middle of the bill, as now and then to leave a wide gap there: the casque is small, or wanting at first, becoming developed by age.

The orbital region, and sometimes the whole face likewise, are naked; and there is usually a naked space on the throat. The eyelids are protected by strong eye-lashes. The wings are short or moderate, but ample, with the three first quills graduated, and the 4th or 5th longest; the secondaries are elongated, and nearly equal to the primaries. The tail is generally long, of ten feathers, rounded or graduated, sometimes with the two centre-feathers elongated. The tarsi are in most short and stout, with transverse scutæ in front, reticulated behind; the outer-toe is joined to the middle one, nearly to the apex; the inner-toe not so much so; and the sole of the foot is large and broad.

The tongue is short, heart-shaped as in the Hoopoes. The sternum is somewhat square in form, widening posteriorly, and has one shallow emargination on each side. The furcula is small, and does not join the sternum. The œsophagus is wide, permitting large morsels to pass down whole. The stomach is moderately muscular, and the intestines are rather short, and destitute of cœca. They have a palatal protuberance like the Buntings. The body-plumage is destitute of the supplementary plume, and the bones are more completely permeated by air than in most other birds, even to the very bones of the feet. Most of them have the uropygial glands much developed, the secretion perhaps being required to protect the plumage during the rains, their large size exposing them much to the full force of the monsoon.

The Hornbills usually live in pairs, most of them associating, at times, in small flocks; and they live almost entirely on fruit,

which they swallow whole, tossing it up in the air after separating it from the tree, and catching it again. They generally, if the morsel be large, rub it well between their mandibles, before swallowing it. In captivity they will eat small birds, mice, meat, rice, or any thing that is offered to them. It is said that some of the African species live on reptiles, beetles, and even on carrion; the very particular *Abba Gumba*, Bruce, (*Bucorvus Abyssinicus*,) walking, and even running on the ground; and attacking snakes which it beats down with its wings. Unlike all the others, this African bird has elongated tarsi. They nestle in holes of trees, laying three or four white eggs; and, in the Indian species,* the male bird plasters the female up in the hole with mud, only allowing her bill to protrude, by which he feeds her.

The Hornbills are mostly forest-birds; in India, one species only frequenting gardens, groves of trees, and avenues. They are very arboreal, rarely alighting on the ground, and they pass actively enough about the branches of trees. The flight of some is an alternation of rapid strokes, and a sailing with out-spread wings: in others, it is performed by continuous heavy flapping. The voice of most of them is harsh. Several species occur in Africa. Others in India, and more especially in Malayana, in which province they are greatly developed.

This family has usually been placed among the *Conirostres*, from their large size, and alleged omnivorous diet; but their feet differ very much from the perfect-footed Crows, and resemble closely those of the Kingfishers and Bee-eaters, at the end of which, indeed, Cuvier classed them. They are certainly a somewhat isolated group, but they, nevertheless, show affinities, more or less strong, to other families. They may be said to approach the Crows, through some of the African species which have the tarsus lengthened, and are said to run on the ground, and eat carrion, on the one side, and the large-billed Crows, *Corvultur*, on the other. They have a considerable general resemblance to the Toucans among the *Scansores*, but they differ considerably from the true

* Livingstone remarks the same of the African, and states that the females, while thus immured, become very fat, and are much sought as a dainty morsel.

Zygodactyle Toucans of S. America, and are much more nearly related to the Hoopoes, and *Irrisor*, of the Tenuirostral tribe. They are, indeed, popularly called *Toucans* throughout India; and this appears to be their name in some of the Malayan isles; the word signifying a worker, from the noise they make.

The genus Buceros has of late been sub-divided into several genera, most of which differ in the form of the bill, and the style of coloration. Although, to some, it may at first sight appear an unnecessary refinement to sub-divide birds of such a marked group, yet, if it be considered that the Kingfishers (and many other families as well) are just as marked a group as the Hornbills, and are sub-divided into many genera, on what is considered ample grounds, it will at once be conceded that there is equally sufficient reason for dividing the Hornbills.

Gen. Homraius, Bonap.

Char.—Bill with a broad flat casque, extending backwards over the head, for more than half the length of the bill, and descending to meet the bill at a right angle. Of large size; plumage black and white.

140. **Homraius bicornis**, Lin.

Buceros, apud Linnæus—Horsf., Cat. 868—B. cavatus, Shaw, —Gould, Cent. Him. Birds, pl.—Jerdon, Cat. 196—Blyth, Cat. 174—B. homrai, Hodgs. As. Res. XVIII. 169, with fig—*Homrai*, in Nepal—*Ban-rao*, at Mussooree; both words meaning 'king of the jungles'—*Garuda*, Can.—*Garur*, Mahr.—*Malle moraki*, Mal.— 'Rhinoceros Hornbill' of Europeans in India.

The Great Horn-bill.

Descr.—Head, and base of bill all round, back, wings, and belly, black; neck, ends of the upper tail-coverts, tail, thigh-coverts, vent, under tail-coverts, and wing spot, white, the latter formed by the edges of the greater coverts; the base of the primaries, and the tips of all the quills, also white; tail with a broad black band, towards the terminal third. The neck, and sometimes the wing-spot, are often smeared yellow, from the secretion of the uropygial gland.

Bill, with the broad casque red above, passing into deep waxen-yellow; upper mandible yellow, red at the tip; lower mandible whitish-yellow, (ivory-white in adults); space between the casque and the bill, blackish in front, from whence a black stripe runs down the crest of the bill towards the point, in the male sex only; base of both mandibles, and cutting edges, also black; posterior termination of the casque black in the male, red in the female; orbitar skin black.

Length 4 feet; wing 19 to 20; tail 17; bill in a straight line, from point to gape, 10 inches; from point to posterior termination of casque $13\frac{1}{4}$ inches; casque alone $7\frac{1}{2}$ inches long, $3\frac{1}{4}$ broad at base; depth of bill at base, including the casque, 4; tarsus $2\frac{1}{2}$; irides deep brown; said by Hodgson to be hoary in the young bird, and intense crimson in the adult.

This large Hornbill is found in the forests of Malabar, from the extreme south up to Goa; and also in the Himalayas. I have not seen it in any of the other forest-regions, and there is no record of its having been found elsewhere within my particular province; but it is common in Assam, Burmah, the Malay peninsula, and Sumatra. I have seen it in the forests of Malabar, below the ghâts, but rarely. It is generally found on the sides of the hills, and I have seen it up to 5,000 feet on the eastern slope of the Neilgherries. In the Himalayas, near Darjeeling, I found it from 3,000 to 5,000 feet. Hodgson says that it tenants the lower ranges of hills, contiguous to the plains. It is sometimes seen in pairs, occasionally in small flocks; generally keeps to the thickest jungle, and to lofty trees; but occasionally may be seen seated on a high tree in an open space. Hodgson states that it seems to prefer the open and cultivated spots in the wilds it inhabits, which spots are usually limited to the banks of rivers. This naturalist must have seen it more abundant than I ever have, for he speaks of twenty to thirty birds being commonly found in the same vicinity; six or eight on the same tree. I never saw a flock of more than five or six, either in Southern India or the Sikim Himalayas, and that rarely. It is, in general, rather a silent bird, making merely a deep but not very loud croak; occasionally, however, when a party are

together, they utter most loud, harsh, and discordant cries. Hodgson says that the clamour of a wounded bird is something perfectly amazing. "I cannot," says he, "liken this vehement vociferation to anything but the braying of a jackass; its power is extraordinary, and is the consequence of an unusually osseous structure of the rings of the trachea and larynx."

The Homrai flies with more repeated flappings of its wings than the other Hornbills, only in general sailing, just before alighting on a tree. The noise of its wings can be heard more than a mile distant. Like the others, it breeds in holes in large trees; and the "male builds the female in, by covering the hole in the tree, where she incubates, with mud, (Baker says *with its ordure*)* leaving only room for her bill to protrude, and receive food from his." This, Major S. R. Tickell, who was the first scientific observer of this most curious fact, and whose words I quote, "has seen with his own eyes." Mason, in his work on Burmah, makes the following statement—"the female must sit during her incubation, for, if she breaks through the inclosure, her life pays the forfeit; but, to compensate for the loss of freedom, her spirited mate is ever on the alert to gratify his dainty mistress, who compels him to bring all her viands unbroken; for, if a fig or any other fruit be injured, she will not touch it." This I look on as a native story, and improbable. Fruit forms the only food in the wild state of this, as of most other, Indian Hornbills; and it always swallows it whole, tossing it in the air before swallowing it, and catching it again in its mouth.

Mr. Elliot, as quoted in my Catalogue, remarks, "At the root of the tail, above, is a small sac, in which is a bundle, or pencil, of short bristles, forming a brush, from which exudes a yellow oily secretion, with which the birds appear to dress the white wing-spot. When first shot, the yellow color comes off the bill, in considerable quantities; and the only parts of the body besides, that are stained with this color, are the white wing-spot, the rump, and the small crest on the back of the head, this latter but slightly. The yellow substance continued to exude from the brush long after the specimen was prepared and dry. The Garuda is sacred to Vishnu, among the inhabitants of the forests."

* V. J. A. S. 1859 p. 292.

Hodgson states, from comparison of many specimens, that the body of the *Homrai* does not reach its full size under two or three years; and that the bill and casque, especially the latter, are not perfectly developed in less than four or five years. Blyth, however, from observation of a living specimen, that attained its full development in captivity, is of opinion that about three years is the full time required.

The generic name *Buceros* has been retained for *B. rhinoceros*, L. from the Malayan Peninsula and the nearly allied species *B. lunatus*, T. from Java. *B. hydrocorax*, L., a large red-billed Hornbill from the Moluccas, has been separated as *Hydrocorax*, Bonap., for which Cabanis substitutes *Platyceros*.

Gen. Hydrocissa, Bonap.

Char.—Bill with a long, sharp, acute casque, extending from the base of the bill over two-thirds of its length.

This division comprises the best-known birds of the family, which are of large size, and have black and white plumage.

141. Hydrocissa coronata, Bodd.*

Buceros, apud Boddaert—Horsf., Cat. 869—B. pica, Scopoli—Blyth, Cat. 177—Pl. Enl. 873—B. monoceros, Shaw—B. malabaricus, apud Jerdon, Cat. 197—*Dhan-churi*, H.—*Bagma dunes*, in Bengal—*Wayera*, Mahr.—*Kannari*, Concan.—*Peshta ganda*, of the Gonds; sometimes, by Mussulmans in the south, called *Suliman murghi*, *H.*, *i. e.*, Solomon's fowl.—*Kuchla-kha*, in Goomsoor.

The Malabar Pied Hornbill.

Descr.—Black; beneath, from the breast, tips of the primaries and secondaries, and the three outer tail-feathers on each side, with more or less of the next pair, pure white.

Bill, and part of the casque, yellowish-white; base of both mandibles black, extending obliquely downward and forwards; also the hind margin of the casque (in the male only); a large patch of the same color occupies the anterior three-fourths of the casque

* Not *Buceros coronatus* of Swainson, which is a S. African species.

in old specimens, but never reaches downwards to the upper mandible, as in the next species. Casque very large, and exceedingly compressed laterally, protruding far backward over the crown and its ridge, terminating in an acute angle anteriorly, being prolonged considerably beyond the junction of the casque with the upper mandible.

Length 3 feet; wing 13 inches; ext. 39 inches; tail 14; bill from gape 7 inches; bill with the casque 4 inches high; casque itself 8; naked skin on the throat, pale livid-fleshy; irides crimson, brown in young birds; feet dark grey.

The female is rather smaller; there is no black on the hind edge of the casque, and both bill and casque are slightly smaller. The young have at first no black on the incipient casque, which appears, and increases in quantity, with the growth of the latter.

The Malabar Pied Hornbill is found in all the heavy jungles of Southern India. I have seen it in Malabar, Goomsoor, and Central India. It extends also to Ceylon. They are almost always found in small parties of five or six, and very generally in thick forest, near water; they live on fruit and berries, which they swallow whole; and are very fond of the fruit of the *Kuchla*, (*Strychnos nux-vomica*,) hence the name in some parts of India. The fruit of the banian, and other figs, are also favorite morsels with this, as with all other fruit-eating birds. White notices that one he examined had eaten an egg. They are very noisy, and their voice is loud and harsh. They occasionally, in forest country, come out into open spaces in the jungle, to large trees that have fruit on them. Layard states that it appears to be much on the ground, seeking for food: this I have never observed. He further says that, to detach fruit from the tree, the bird throws itself off its perch, twisting and flapping its wings till its object is attained, when it recovers itself, and swallows the fruit. He says that he has seen a live bird help itself to climb by its bill, as a Parrot does.

Mr. Baker states that the male bird plasters up the female in her nest, in the hole of a tree, during incubation, as the last species is recorded to do.

142. **Hydrocissa albirostris,** Shaw.

Buceros, apud Shaw—Blyth, Cat. 179—Horsf., Cat. 870—B. malabaricus, Gmel.—Edw. Birds, pl. 281, f. D.—B. leucogaster, Blyth, J. A. S. X.—B. nigralbus, Hodgs.

The Bengal Pied Hornbill.

Descr.—Black; beneath from the breast, and the tips only of the four pairs of lateral tail-feathers, white. The casque is much less compressed than in *H. coronata*, in fact, bulging, and the black patch upon it is much smaller, appearing only on the extreme tip of the ridge, but spreading downward and backward, over part of the middle of the upper mandible, which latter it never reaches in the last: the cutting edges of both mandibles are more or less black in this one.

Length 30 inches; wing 10; tail 11; tarsus $1\frac{3}{4}$; bill, from front to gape, 5 to $6\frac{1}{2}$ inches; bill and casque $3\frac{3}{4}$ inches high; casque alone 7 inches long; this protrudes far back over the crown, and narrows anteriorly, ending in a less acute angle, viewed laterally, than in the last. A livid fleshy spot at base of lower mandible.

This Hornbill takes the place of the last, in Northern India. It is found in the Midnapore jungles, in Rajmahal and Monghyr, and at the base of the Himalayas; and it spreads eastward to Assam, Sylhet, and Burmah.

It is stated to occur in large flocks. I saw it in upper Burmah, in small parties of five or six.

143. **Hydrocissa affinis,** Hutton.

Blyth, J. A. S. XVIII.—Blyth, Cat. 178.

The Dehra-Doon Hornbill.

Descr.—Precisely colored as in *H. albirostris*, but larger, being equal in size to *H. coronata*. Length of one 36 inches; wing 13; tail 15; bill at gape 7; height with casque 4; tarsus 2. The black patch at the end of the casque passes down obliquely into the upper edge of the bill, but does not spread further over it; the edge of the mandibles, and more especially the under one, black;

and the posterior margin also black, both on the bill and casque. Has only hitherto been found in the Dehra Doon.

A very closely allied species occurs in Malacca and Java, *H. convexa*, Temm., Pl. Col. 530; this has the size and casque of *H. albirostris*, with the entirely white outer tail-feathers of *H. coronata*. The same region has also *H. malayana*, and *H. nigrirostris*; if the latter be not the female of the other, as suggested by Mr. Wallace.

The next two species have been placed under the same genus, *Tockus*, of Lesson; but on what principle they are kept together, whilst other groups are instituted chiefly on the form of the bill, I cannot understand. *B. gingalensis* is as distinct in form from *B. bicornis*, as *Nipalensis* is from *coronata;* and if *Aceros* be held good for the one, and *Hydrocissa* for the other, surely, on similar grounds, these two ought to be separated; and I shall accordingly do so; calling the first group, typified by *bicornis*, *Meniceros*, after Gloger; as *Tochus* appears to have been instituted on some African species very similar to *gingalensis*.

Gen. MENICEROS, Gloger.

Syn. *Tockus*, in part, Auct.

Char.—Bill with a compressed sharp-pointed casque; size small; plumage grey.

The following bird and *B. panayensis*, Scopoli, have been classed together under the name of *Penelopides*, Reichenbach; but I do not perceive any special affinity between the two. The latter bird more resembles *Nipalensis* in its mode of colaration; but the adult has a small casque, and the tail is not white.

144. **Meniceros bicornis**, SCOP.

Buceros, apud SCOPOLI—HORSF., Cat. 881—BLYTH, Cat. 183—B. ginginianus, LATH.—JERDON, Cat. 198—B. oxyurus, WAGLER—B. cineraceus, HODGS.—B. griseus, LATH., apud BONAP.—*Chakotra*, H.—*Puttial dhanes*, H., in Bengal—*Dhanmar*, or *Lamdar*, H., in the Upper Provinces—*Rundu-mukala guwa*, Tel., *i.e.*, Two-billed Pigeon.—*Munu mukala kaka*, *i. e.* Three-billed Crow, Tam.—*Selagilli*, at Saugor.

The Common Grey Hornbill.

Descr.—Plumage grey, paler below, and from the breast gradually albescent; ear-coverts darker cinereous, and a light streak over the eye and ear-coverts; primaries and secondaries dusky black, the latter margined with grey, and all tipped white; the first three primaries with a pale outer web, and a white streak about the middle, or rather nearer the tip; tail also black near the end, tipped with white.

Bill and casque dusky; the tips and ridges of both mandibles whitish; casque low and compressed, the ridge prolonged anteriorly to a very acute angle; and the hind-part concealed by the feathers of the forehead (which bend down over it,) and not extending backwards over the crown.

Length about 22 inches; ext. 32; wing 8; tail $10\frac{1}{2}$; bill straight to gape, 5 inches; height $1\frac{3}{4}$; casque up to 3 inches; tarsus $1\frac{3}{4}$; irides red-brown; feet dark plumbeous.

This small Hornbill is spread throughout all India, in well-wooded districts, but does not appear to extend into Assam, nor into any of the countries to the eastward. It is not found in thick forests, and is almost unknown in the woods of Malabar, but frequents open and thin forest-jungle, groves of trees, gardens, and especially the fine old avenues of banian and other trees, that abound in the extreme south of India, and are said to have been mostly planted by Hyder Ali. It is almost always found in small parties, occasionally in pairs, living chiefly on fruit, and especially the figs of the banian, peepul, and other fig-trees; sometimes, however, feeding on large insects. On one occasion I found that it had eaten *Mantides* and *Locustæ*. It has a loud sharp cry. In some parts of India the flesh is used, medicinally, to alleviate the pangs of child-birth.

Gen. Tockus, Lesson.

Char.—Bill without a casque, but with the ridge somewhat elevated and much curved; size small; plumage grey.

The Indian species has been separated as *Rhinoplax*, Gloger, according to Bonaparte; but Horsfield has applied that generic name to *B. galeatus*.

145. **Tockus gingalensis**, Shaw.

Buceros, apud Shaw.—Levaill, Ois. Rar. pl. 32—Griffith Cuvier, Vol. VII, pl. at p. 435—Jerdon, Cat. 199—Blyth, Cat. 184—B. pyrrhopygus, Wagler—*Kaldal-haki*, Can.—*Chalotra*, H.

The Jungle Grey Hornbill.

Descr.—Head above, and back, dark cinereous-brown, with a cast of bluish-grey; the greater coverts, secondaries, and primaries, all narrowly edged with whitish, and the latter broadly tipped with white, and with an oblique white line on their outer edge; a pale line over the eyes, extending along the sides of the head; the two centre tail-feathers dusky bluish-grey, the rest dusky blackish-grey, broadly tipped with white, except the pair next the centrals; beneath, light dusky grey, the feathers centred paler; rufescent on the lower abdomen, outer thigh-feathers, and under tail coverts.

Bill dingy deep yellow; irides red-brown; feet dark grey.

Length 22 inches; wing $8\frac{1}{4}$; tail $8\frac{1}{2}$; bill straight to gape $4\frac{1}{4}$; breadth at base $1\frac{2}{10}$; weight 14 oz.

The Jungle Grey Hornbill is found in the forests of Malabar and Ceylon. I have seen it nowhere else than in Malabar, and it is perhaps most abundant in the extreme south, in Travancore, and in Ceylon. Its food consists of fruit of various kinds. It is rather a shy bird; is found singly, or in pairs, occasionally in small parties; has a harsh call like the others; and is said to breed in the same way.

There are several (nearly allied) African species of this genus.

Gen. Aceros, Hodgson.

Char.—Bill without a casque, with the culmen slightly elevated at the base, and with some transverse ridges on the sides of the upper mandible: of large size: sexes differing in plumage; tail white; naked skin of throat and face highly coloured.

146. **Aceros nipalensis**, Hodgson.

As. Res. XVIII, 176, with figure of female—Blyth, Cat. 189—Horsf., Cat. 884—J. A. S. 1847, pl. XXIV., fig. of male.

The Rufous-necked Hornbill.

Descr.—Male. The whole head, neck, breast, and upper abdomen, bright ferruginous; back and wings black, the latter, with the 3rd to the 8th primary, broadly tipped with white; tail black at the base, white for more than half its length; belly, thighs, and vent, ferruginous-bay.

Naked skin round the eyes, and at base of bill, rich velvety light-blue; the naked skin of the throat bright scarlet. Bill yellow, with the grooved striæ chesnut. A nestling male bird, in the Museum As. Soc., Calcutta, has the neck rufous, from which it would appear that the sexes differ *ab initio*.

Length 4 feet; wing 18½ inches, tail 18; bill straight to gape 9; height 3.

The female is wholly black, except the tips of the wings, and end of the tail, for about a third of its length, which are white. Length 40 inches; wing 17½; tail 17.

This fine Hornbill is found in the S. E. Himalayas, in Nepal and Sikim, extending into Assam and Munipore. At Darjeeling it is found from 2,000 to 6,000 feet, generally in pairs. It utters a deep hoarse croak, which is constantly heard in the thick and lofty jungles it frequents. It lives on fruit of various kinds, and breeds in holes of trees; but I was unable to find its nest when at Darjeeling, to ascertain if, like the others, it encloses the female during incubation. Hodgson was told by the natives that "it makes its abode upon the solid wood, in an old decaying trunk of a tree, and has its mansion further secreted by an ingeniously contrived door, so that it is difficultly found." This is evidently a misconception, though perhaps founded on the usual peculiar nidification. Hodgson gives an interesting account of one that he kept in captivity. It used to eat meat, either raw or dressed, fruit, rice, made into large balls with ghee, &c.: water it never touched. The throat is very wide, and the swallowing powers prodigious: whatever is offered to the bird as food is gulped entire, after being rubbed more or less between the huge mandibles.

Rhyticeros ruficollis, T., *Rh. subruficollis*, Blyth, and *Rh. plicatas*, Latham, three species somewhat allied to *A. nipalensis*, are found

in Burmah and Malacca. The genus *Cranorhinus*, Cabanis, (the same as *Cassidix*, Bonap.,) is founded on *B. cassidix*, Temm., to which *sulcatus*, and *corrugatus*, appear nearly related; and *gracilis*, T., might be the female of the latter. These two forms, with *Aceros*, constitute Bonaparte's genus *Calao*.

Other forms of Hornbill found in the Malay peninsula and the neighbouring isles are *Rhinoplax*, founded on *B. scutatus*, (*galeatus*, Auct.), with a red bill and lengthened tail. *Berenicornis* was constituted for *B. comatus* Raffles; and *B. Tickelli*, Blyth, lately discovered by Major Tickell in Tenasserim, belongs to the same group, a somewhat similar form to which has also lately been found in Western Africa. *Anorhinus* is founded on *B. galeritus*, Temm., of which Blyth's *carinatus* is the young. This form makes an approach to *T. gingalensis*. The *Buceros Abyssinicus*, or *Abbagumba* of Bruce, before alluded to, has been separated from *Bucorvus*, which contains the large black and white Hornbills of Africa, as *Tmetoceros*, Cabanis, *Bucorax*, Sundevall.

TRIBE SCANSORES.

Syn. *Zygodactyli* of some.

Toes in pairs; bill, wings, and tail, various.

The birds composing this tribe differ among themselves as much, if not more so, than those of the Fissirostres. The chief point of resemblance among them is the feet. The toes are long; the outer toe is either turned completely backwards, or is articulated at right angles to the anteriors, and is often larger than them, whilst the hind-toe is remarkably small. This structure enables them to climb well. The wings, as a general rule, are short and rounded, whilst the reverse is the case in the last tribe. These birds are very arboreal, a few only habitually descending to the ground. Some of the families live exclusively on fruit, others entirely on insects, and some partake of both. They do not all of them climb, as the name would imply; but some hop about the branches of trees in search of fruit and insects. Most of them nidificate in holes of trees, and have white eggs. A few construct inartificial nests, and

have coloured eggs. They vary a good deal in some points of their anatomy.

They are divided into the following families—1st, *Psittacidæ* Parrots; 2nd, *Picidæ*, Woodpeckers; 3rd, *Megalaimidæ*, Barbets; 4th, *Cuculidæ*, Cuckoos; all of which are represented in India. Other families, not known in India, are,—5th, *Ramphastidæ*, or Toucans, peculiar to the new world; 6th, *Musophagidæ*, Plantain-eaters, and 7th *Coliidæ*, or Colies, the two last only found in Africa.

That very peculiar bird, *Opisthocomus cristatus*, of South America, placed among the *Gallinaceæ* by most foreign Ornithologists, near the Plantain-eaters by Gray, and among the Cuckoos by Swainson, is located by Wallace between these two last families.

Fam. PSITTACIDÆ, Parrots.

Bill short, thick, strong; upper mandible much curved and hooked, (sometimes toothed or notched) overhanging the lower one, and with an acute tip; lower mandible short, obtuse; base of bill covered with a cere, in which the round and small nostrils are pierced, near the culmen; wings usually moderate or long, the 2nd quill generally the longest; tail various; tarsi short, stout, covered with small tubercle-like scales; toes in pairs; claws well curved.

The Parrots are too well known to require much detail of their structure or general appearance. They are mostly birds of gay and gorgeous plumage; some with short and nearly square tails; many with very long and wedge-shaped tails. The bill varies a good deal in length and strength. Parrots are inhabitants of the warm countries of the whole globe, extending into the temperate regions in Australia, and even to the cold climate of the Auckland Islands, south of New Zealand. They dwell chiefly in forests, and live on fruit, grain, or roots, &c.; they hold their food up to the mouth with one foot, as with a hand; and they clamber well, aided by their powerful bill. They nidificate in holes of trees, and lay several white eggs. Their voice is generally harsh. They have great intelligence; and, from the conformation of their larynx and tongue, are enabled to imitate the human voice better than most other birds.

The cranium is large; the neck has usually twelve vertebræ; the sternum is large, entire, very similar to that of the diurnal *Raptores*; but somewhat more narrow, and with an oval aperture on each side posteriorly; the keel well developed, rounded anteriorly; the furcula thin and flattened, and absent in more than one group. The tongue is thick and fleshy. The lower larynx is complicated, furnished with peculiar muscles, and the bony ring at the divarication of the bronchi is absent. The jaws are powerful, provided with some peculiar muscles, and the upper mandible is moveable. The stomach is slightly muscular; the intestines are remarkably long and thin, and are without cœca; and there is no gall bladder.

Their short, curved bill, the presence of the cere, and the form of their sternum, ally them to the birds of prey; and they have, like them, a dilatation of the œsophagus which secretes a milky fluid, like that of the Pigeons, with which they also agree in the want of a gall-bladder. Some systematists would class them in a separate order from the *Insessores*, placing them at the head of the whole class, as the *Quadrumana* are usually placed among mammalia; but I agree with Gray, Horsfield, Wallace, and indeed most naturalists, that their true place is among the scansorial division of the *Insessores*. Those who place the Parrots at the head of the birds, rely chiefly on their large brain, and hence greater intelligence and docility, and not on any general superiority of organization; but reasoning on this head alone, we should place Dogs above Monkeys. Considering their anatomical structure, which is, always excepting the brain, of an inferior type; their feet in pairs, and even the reticulation of their tarsi; their bright colors, their nestling in holes of trees, and white eggs; joined with the fact of their very great development in Australia, to the total exclusion of Wood-peckers, I must conclude that their true place is among the *Scansores*, and that their nearest affinity is with some of the birds of prey.

The family of Parrots is divided into several sub-families, the chief of which are as follow:—

1st. *Psittacinæ*, or true Parrots.—These have the bill sometimes crenated, or toothed, have short tails, the head not crested, and are found over both continents.

2nd. *Loriinæ* or Lories.—Of small or moderate size, and usually very rich and gaudy plumage; some have the tail short and square, others have it rounded or graduated.

3rd. *Palæorninæ* or Parrakeets.—These have the tail generally long and wedge-shaped, and are found in the tropical and sub-tropical regions of the old world, and are well developed in India and Malayana.

4th. *Platycercinæ* or Australian Parrakeets.—Formerly included with the *Palæorninæ*, and to which the *Pezophorinæ* and *Nymphicinæ* of the same continents also appear to belong as subordinate types.

5th. *Arainæ*, the Maccaws. Of large size and most gorgeous plumage, peculiar to America.

6th. *Cacatuinæ*, or the Cockatoos of Australia and the neighbouring islands; and lastly, *Nestorinæ*, of Australia, which are of large size, and usually of sombre colour, and which Bonaparte places in his *Psittacinæ*. The remarkable genus *Strigops* of New Zealand has much the appearance of an Owl, and is said to be nocturnal in its habits. It is ranged by some as a distinct family, but appears to approach some of the members of the *Nestorine* group

Sub-fam. PALÆORNINÆ, Vigors.

Bill moderate; upper mandible moderately hooked; under mandible short; tail very long, wedge-shaped, the feathers narrow and pointed; tarsus moderate.

The sub-family of Parrakeets is peculiar to the Eastern hemisphere, being found in the tropical regions of Africa and Asia, extending to the temperate region in Australia. They are of moderate or small size, and many of them feed frequently, and indeed some habitually, on the ground, on grain and small seeds, but they also eat fruit. Their plumage is pleasing, without being gaudy. Some of them were known to the ancients, one, or perhaps more species having been brought to Europe from the east by Alexander.

Gen. PALÆORNIS, Vigors.

Char.—Bill short, culmen rounded, well curved, toothed, and with the tip acute, not much deeper than it is long; lower mandible short; wings long, with the 2nd and 3rd quills sub-equal

and longest; tail very long, cuneate; the feathers narrow, almost linear, with their tips obtuse, and the two middle feathers in general greatly exceeding the others.

The Parrakeets are a well-known group of birds, of moderate or small size, and green colour, ornamented about the head and neck with various distinctive marks. With the exception of the little *Loriculus* and *Psittinus*, they are the only Parrots found in the Indo-Chinese countries, and all western Malayana, and are very characteristic of this zoological province: as is always the case in such groups, there are many local species. They are very docile, and can be taught to repeat words, and I have even known them trained as letter-carriers for a short distance.

147. Palæornis Alexandri, Lin.

Psittacus, apud Linnæus—Pl. enl., 642—Jerdon, Cat. 201—Blyth, Cat. 16—Horsf., Cat. 896—P. nipalensis, Hodgs.—*Chandana*, in Bengal—*Chanda-ban-i*, at Mussooree—*Karan suga*, and *Kararia*, in Nepal—*Ra-i tota* (*i. e.*, Royal Parrakeet) H., in the south of India—*Pedda chilluka*, Tel.—*Peria killi*, Tam. *Keri-euri* of the Gonds.

The Alexandrine Parrakeet.

Descr.—Adult male, green, brilliant emeraldine on the head and face, duller on the back, paler beneath, inclining to dingy on the breast, and yellowish on the chin and lower tail-coverts; quills bluish; the inner edge of the inner webs dusky; tail with the two centre feathers bright green at their base, pale bluish green for the remaining two-thirds, and tipped yellowish; the outer feathers light green on the outer webs, yellowish green internally; a black stripe from the base of the lower mandible crossing round behind the ears, and a demi-collar of peach-rose color on the nape and sides of neck; in front of this collar the feathers are glaucous; a dark red spot on the shoulders of the wings, and some of the feathers of the wing coverts and scapulars narrowly edged with dusky; a narrow line from the nostrils to the eye tinged with black.

Bill deep red, yellowish beneath; feet plumbeous; irides pale yellow.

Length 21 inches; wing $8\frac{1}{4}$; tail $11\frac{1}{2}$; bill at gape $1\frac{1}{4}$; height $1\frac{1}{2}$. The female wants the collar of the male, and is generally less brightly coloured. The beak of this species is very large and strong.

The Alexandrine Parrakeet is found in the Lower Himalayas, in the forests of Malabar, also in the hilly region of Central India, and the northern Circars. It is occasionally found in parts of the Carnatic; but it is not till you get far north, that it is at all common. It is by no means confined to hill regions, for I have found it breeding in a grove of trees in the Deccan, not far, however, from some low hills; and it often comes into the open country to feed, but generally returns at night to the hills or jungles. It is said to be the ordinary Parrakeet of the Punjab, and was thence, doubtless, taken to Europe by Alexander; but Adams says it is not so common there as the next species. It is abundant in Ceylon, and in Northern Burmah.

This species is not nearly so common in the south of India, as the next; and the first time I became aware of its occurring in the extreme south, was finding one dropped by a Shahin (*Falco peregrinator*), which I fired at in an open space in the jungles of Malabar. It feeds both on fruits and grain, and sometimes returns great distances to roost in trees near the hills. At such times it flies at a great height. The call of this species is full and rich. It breeds in the cold weather, December and January, in holes of trees, and lays usually four white eggs.

148. **Palæornis torquatus**, Bodd.

Psittacus, apud Boddaert—Pl. Enl. 551—Sykes, Cat. 20—Jerdon, Cat. 200—Blyth, Cat. 17—Horsf., Cat. 807—*Tiya*, in Bengal—*Gallar*, H. in the N. W.—*Tenthia suga*, in Nepal—*Lybar* at Mussooree—*Ragoo*, and *Keerah*, Mahr.—*Lybar tota*, H., of Shikaries in the South—*Chilluka*, Tel.—*Killi*, Tam.

The Rose-ringed Parrakeet.

Descr.—Colours much as in the last, but without the red shoulder spot; the black band in front extends under the chin, meeting its fellow, and reaches backward nearly to the nape,

though narrower throughout, whilst the rose-coloured demi-collar above is also narrower.

Bill cherry-red; irides pale yellow; feet cinereous.

Length $16\frac{1}{2}$ inches; wing $6\frac{1}{2}$ to 7; tail $9\frac{1}{2}$; bill at gape 1; height $\frac{7}{8}$. The female wants the rose collar; but has a bright emeraldine narrow green collar in its place.

The Rose-ringed Parrakeet is found over all India, from the foot of the Himalayas to the extreme south and Ceylon, but it is rare to the east of the Bay of Bengal. It is found in other parts of western Asia, and throughout tropical Africa.*

It is one of the most common and familiar birds in India, frequenting cultivated ground and gardens, even in the barest and least wooded parts of the country, and it is habitually found about towns and villages, constantly perching on the house top. It is very destructive to most kinds of grain, as well as to fruit gardens. Burgess says that they carry off the ears of corn to trees to devour at leisure, and I have observed the same sometimes. When the grains are cut and housed, it feeds, on the ground, on the stubble corn fields, also on meadows, picking up what seeds it can; and now and then takes long flights, hunting for any tree that may be in fruit, skimming close to and examining every tree; and when it has made a discovery of one in fruit, circling round, and sailing with outspread and down-pointing wings, till it alights on the tree. It associates in flocks of various size, sometimes in vast numbers, and generally many hundreds roost together in some garden or grove. Mr. Layard has given an interesting account of the roosting of this species in Ceylon. At Saugor all the Parrakeets, Mynas, Crows, Bee-eaters, &c., of the neighbourhood, for some miles around, roost in company in a large grove of bamboos; and the deafening noise heard there from before sunset till dark, and from the first dawn of day till long after sunrise, give to the listener the idea of numberless noisy steam-machines at work. Many of the flocks of Parrots are very late in returning, and fly along quite low, skimming the ground, and just rising over a tree, house, or any obstacle in the way, and, for several nights in

* Swainson, Gray, and others, however, give the African one as distinct.

succession, several Parrakeets flew against the wall of a house, on the top of a hill in Saugor, and were killed.

It breeds both in holes in trees, and very commonly, in the south of India, about houses, in holes in old buildings, pagodas, tombs, &c. Like the last, it lays four white eggs. Its breeding season is from January to March. Adams states that "he has seen this Parrakeet pillage the nests of the Sand Martin; but with what intent, he does not guess at. Its ordinary flight is rapid, with repeated strokes of the wings, somewhat wavy laterally, or arrowy. It has a harsh cry, which it always repeats when in flight, as well as at other times. Mr. Philipps remarks that the Kite will sometimes swoop down on them when perched on a tree, and carry one off in its talons; also that owls attack these birds by night.

149. **Palæornis rosa**, Bodd.

Psittacus, apud Boddaert—Pl. enl. 192 and 888—Blyth, Cat. 21—Horsf., Cat. 900—P. bengalensis, Brisson—Jerdon, Cat. 202—P. cyanocephalus, L.—P. flavicollaris, Frankl. (the female)—*Faraidi*, Beng. *i.e.* the plaintive, or complainer,—*Tui-suga*, in Nepal—*Tuia-tota*, H. in the South—*Desi-tuiya*, at Mussooree—*Bengali-tota*, in the Punjab—*Rama-chilluka*, Tel.

The Rose-headed Parrakeet.

Descr.—Adult male, the whole head and face pale roseate, tinged with plum bloom posteriorly and inferiorly; a black spot from the base of the lower mandible, uniting into a narrow complete collar, and meeting its opposite one at the chin, which is thus broadly black; behind the collar, the hind-neck verdigris-green; the upper portion of the back and scapulars yellow green; the lower back, rump, and upper tail-coverts, pale blue-green; the wings green, with a small red spot on the lesser coverts; shoulders bluish green; the whole inner webs of most of the quills dusky; tail, with the two centre feathers, cobalt blue, tipped white; the next pair blue towards the apical portion, also tipped white; the others pale green on their outer webs, yellowish internally; plumage beneath, bright siskin, or yellow green. Some are less brightly

coloured, and more of an uniform green colour, with less yellow; and the old males have the cap much brighter and deeper colored than their juniors.

The female has the head plum-blue, and wants the black collar; but has a yellow demi-collar in front, and on the sides; and the breast is much tinged with oil yellow. The young birds are green throughout; but the centre tail feathers are always blue, and there is usually a faint indication of the pale collar of the female.

Mr. Gray, in his Catalogue of the Parrots of the British Museum, gives two other species of this group, *viz. P. bengalensis*, and *P. cyanocephalus*, the former from Nepal; of the latter he has no specimens; but I doubt their being distinct.

Length 14 to 15 inches; wing $5\frac{1}{4}$; tail $8\frac{1}{2}$; bill at gape $\frac{5}{8}$; height $\frac{3}{4}$.

The Rose-headed Parrakeet is found more or less through all India, extending into the Himalayas, Assam, Burmah, and Ceylon. It is common in the Malabar coast, and on the Eastern Ghâts, in jungles in the Carnatic, also in the forests of the Northern Circars and Central India, Midnapoor, and Lower Bengal. It frequents jungly districts in preference to the more open parts of the country; but occurs in all the more richly-wooded cultivated districts, and it generally visits those parts of the country that are tolerably wooded, during the rains. It usually breeds in the jungles, but I have found its nest in my own garden at Saugor.

It has similar habits to the others, feeding on fruits and grains, which it picks off the standing corn, or in the stubble-fields, off the ground. It is less noisy, and has a much more pleaseant call than the last. Its flight is very swift indeed, much more so that of the two last. It breeds in holes of trees, from December to March, and has usually four white eggs.

Vast numbers are taken in all parts of the country where it breeds, and are sold for caging, especially in Calcutta, where many are carried off by the shipping annually. Hence, no doubt, China and other countries where these birds have been seen in captivity, have been erroneously given as *habitats* for this, as well as sundry other *Psittacidæ*.

150. **Palæornis schisticeps**, Hodgson.

As. Res. XIX., 178—Blyth, Cat. 20—Horsf., Cat. 899—Conurus Himalayanus, Belanger, Voy.—*Madana Suga*, in Nepal—*Pahari tuiya* at Mussooree—*Gagi* of Calcutta bird-dealers.

The Slaty-headed Parrakeet.

Descr.—Head lavender or slaty-blue; chin and narrow band bordering the lavender colour, black; general colour of the upper-parts vivid green; rump and upper tail-coverts with a bluish tinge, a little paler and more yellowish beneath, and tinged about the nape and under wing-coverts with verditer; a marone wing-spot in the male, barely indicated in the female; the two middle tail-feathers green above near the base, then bright blue, and the terminal third yellow; the other tail-feathers all yellow on the inner web and tip, with the rest of the outer web green; tail wholly yellow beneath.

Bill, with the upper mandible, yellow, tinged with coral-red; the tip and the lower mandible yellow; irides straw yellow; orbitar skin slaty; legs dusky green.

Length 16 to 17 inches; wing $6\frac{1}{2}$; tail 10; bill at gape $\frac{3}{4}$; height $\frac{7}{8}$.

The black demi-collar is most developed in the male. The young have, in general, only a trace of the slaty cap.

This Parrakeet is found throughout the lower ranges of the Himalayas, rare in the South-east, for I never saw it myself, and got but one young specimen whilst at Darjeeling. It is, however, found in some of the hill ranges in Assam or Sylhet, for Tytler obtained living specimens at Dacca. Adams says: "its favorite food is seeds of wheat, apricots and pomegranates; very noisy and gregarious." It is closely allied to *P. rosa;* but larger, with a plum-blue instead of a peach-coloured cap.

151. **Palæornis columboides**, Vigors.

Zool. Jour., 1830—Lear, Psittacidæ, pl. 31—Jerdon, Cat. 203—Jerdon, Ill. Ind. Orn., pl. 18—Blyth, Cat. 19—Horsf., Cat.

898—P. melanorhynchus, SYKES, Cat. 121 (the female)—*Madan-gour tota*, H., in the South.

THE BLUE-WINGED PARRAKEET.

Descr.—Head, hind neck, interscapularies, and the plumage beneath, generally, pale dove grey, purest on the head and cheeks; a verdigris green patch on the forehead, lores, and below the eye; a black collar round the neck, meeting at the chin; and in front of this there is a verdigris-green collar, which widens on the upper part of the neck; the lower part of the back, rump, and upper tail-coverts, blue-green; wing-coverts, and scapulars, dark blue-green, the feathers edged pale; the primary coverts and quills, darkish blue, faintly edged with green externally, and dusky on the inner webs; tail-coverts, with the centre feathers, blue, tipped with yellowish white; the next pair blue on the outer web, greenish near the base, and tipped yellow; all the others green externally, yellow internally; beneath all the tail feathers yellow; lower abdomen, vent, and under tail-coverts, pale verdigris green.

The female wants the collar, or has only a faint indication of it, and the bill is black.

Bill cherry-red above, dusky beneath; legs greenish plumbeous.

Length 15 inches; wing 6; tail $8\frac{3}{4}$; bill at gape not quite $\frac{3}{4}$; height $\frac{7}{8}$.

This beautiful Parrakeet is found only in the jungles of the Malabar coast, from Travancore up to N. L. 17° or so, and from the level of the sea to 5,000 feet and upwards, on the slopes of the Neilgherries. It, in general, keeps to the depths of the forests, and frequents only the loftiest trees. Its flight is rapid and elegant, and it associates in small flocks. Its cry is mellow, subdued, and agreeable. It feeds chiefly on fruits of various kinds. The young birds are occasionally taken in the Wynaad by some of the jungle races there, and brought for sale to the Neilgherries.

152. **Palæornis Javanicus**, OSBECK.

Psittacus, apud OSBECK—P. barbatus, GMEL.—BLYTH, Cat. 25 —P. Osbecki, LATHAM—HORSF., Cat. 904—Ps. Ponticerianus

GMEL.—SWAINS. Zool. Ill., n. s., pl. 16—P. mystaceus, SHAW—P. nigrirostris, HODGS. (young female)—*Madna* (*i. e.* pleasing), Bengal—*Kajla*, (from the black forehead,) H., in Bengal—*Imrit-bhela*, in Nepal.

THE RED-BREASTED PARRAKEET.

Descr.—Adult male, head and cheeks lavender purple; a narrow band of black on the forehead, extending to the eyes; a broad black band on the chin and sides of the neck; nape and back of neck, bright verdigris or emerald-green; the rest of the upper plumage grass-green; a large red-patch on the wing, formed by most of the lesser and some of the median coverts; the rest of the wing bluish-green, the quills edged paler on their outer margin; centre tail-feathers blue, edged with green at their base, and narrowly tipped with yellowish-white; the two next pairs bluish on their outer webs; the others mostly green, and all narrowly tipped with yellowish; beneath, from the chin to the lower abdomen, fine pale vinous-red, tinged with peach-bloom next the black collar, and in patches elsewhere; the lower part of the abdomen, vent, and under tail-coverts, blue-green.

Bill with the upper mandible fine red; the lower one dusky.

Length about 17 inches; wing 7; tail 10; bill at gape 1; height $1\frac{1}{8}$.

The female merely differs from the male by having a black bill at first, which changes to red in old or fully adult females.

This Parrakeet is found in the sub-Himalayan region, and, it is said, in the Rajmahal hills; but I think this is somewhat doubtful, and it certainly does not extend into Central India. Out of India it is abundant in Assam, Sylhet, Arakan, and Tenasserim, extending into the Malay peninsula and Java. In some part of Lower Bengal, as in Gorruckpore and Rungpore, it visits the plains, when the rice is ripe, in large flocks. It is brought to Calcutta, caged, in great numbers, from Tipperah, Chittagong, and other places to the East, &c., and is rather a favorite with the natives. Its call is much more agreeable than that of *torquatus* or *Alexandri*. At Thyet-myo in upper Burmah, in May, I observed large flocks of what I presume was this species, though the only specimens I

obtained were in immature plumage. They were feeding on the ground on cow-dung, on the dry bed of the Irrawaddy. Blyth observed this species and *P. rosa* exceedingly numerous in upper Martaban.

Other species of *Palæornis* from the East are *P. Calthrapæ*, Layard, from Ceylon; *P. caniceps*, Blyth, from the Nicobars and Penang; *P. erythrogenys*, Blyth, from the Andamans and Nicobars; and *P. longicauda* from Sumatra and the Malayan peninsula, the young of which is *P. modestus* of Fraser, and *P. viridimystax* of Blyth.

Sub-fam. LORIINÆ, Lories.

Bill compressed, small or moderate, slightly curved; the margin of the upper mandible sometimes sinuated, and the notch obsolete; the lower mandible slender, conic, much longer than high.

The tongue in most is furnished with a protrusile tuft of elongated papillæ, enabling them to draw the nectar from flowers, which, with soft fruits, constitutes their sole food; they appear to have a delicate sense of taste. They are restricted to the Australian region and neighbouring isles, one aberrant genus, in which the tongue is not tufted, extending to India.

Gen. LORICULUS, BLYTH.

Char.—Bill rather small, gently curving from the base; the upper mandible lengthened, slightly sinuated at the margin, moderately hooked, and tapering to a fine point; lower mandible small; wings nearly as long as the tail; 1st and 2nd quills longest; tail short, even, or barely rounded.

These are birds of small size, with a short tail, found in India and Malayana. Their colour is green, with the lower back red, and some distinctive marks about the head. They have usually been classed with the Lories, though they have not the suctorial tongue of those birds. Blyth now classes them with *Eclectus*, as a subordinate division of the Psittacine group. In comparing them, however, with *Eclectus*, I find a considerable difference of structure in the bill, which is more compressed, much more

resembling that of the true Lories, and wants the strong tooth of the two genera named above. On these grounds I prefer retaining it as an aberrant genus of the Lories, as Blyth formerly did, and as Gray and Horsfield now do, leading, it may be, to the small species of the *Psittacinæ*. This is one of the genera in which the *furcula* (or united clavicles) is absent. Mr. Blyth informs me, from late observations on the living birds, that "these Lorikeets are much more active in their movements than the generality of the *Psittacinæ*, and that they run up the wires of their cage with remarkable speed. "This is," remarks Mr. B., "Lory-like. They commonly rest and sleep pendent from the wire-roof of their cage when in captivity."

153. **Loriculus vernalis**, Sparrm.

Psittacus, apud Sparrman—Blyth, Cat. 48—Horsf., Cat. 910—Swains., Zool. Ill., 2nd ser., pl. 1—Jerdon, Cat. 204—Ps. pendulus, Pearson—*Bhora* or *Bho-ara*, H., in the South—*Latkan*, H, in Bengal, *i. e.* the 'pendent.'

THE INDIAN LORIKEET.

Descr.—Above grass-green, darker on the wing-coverts and scapulars; paler and yellowish beneath, the wings and tail blue-green; rump, and upper tail-coverts, dull deep red; wings, and tail beneath, pale bluish; chin and throat, in the male, tinged with verdigris-blue.

Bill dark yellow; irides pale yellow; feet leaden.

Length, $5\frac{1}{2}$ inches; wing $3\frac{1}{2}$; tail $1\frac{1}{2}$; bill at gape $\frac{7}{6}$; height $\frac{5}{16}$.

This pretty little Lorikeet is found in the Sub-himalayan region, and in the jungles of Malabar; but in no intervening part of the country, that I am aware of. Mr. Blyth, in his catalogue, has mentioned a specimen from the Rajmahal hills; but with a query, and it was probably a caged individual. It is also found abundantly in Assam, Sylhet, and Burmah.

I have only found this species in open spaces of the forests in Malabar, occasionally coming into well-wooded gardens near the coast. It is most numerous in Travancore and South Malabar,

becoming rarer towards the North. Mr. Elliot, however, mentions it as visiting Dharwar, above the Ghâts, during the rains only. It is found in small flocks, and keeps up a continual chirping when feeding, which it does on fruit and flower-buds, partly probably for the nectar contained in the latter. It is said to be fond of the toddy of the cocoanut-palm, and to be sometimes taken stupified at the toddy-pots; and I have had them brought me alive at Tellicherry, said to have been taken in that situation. They are occasionally caged, and become very tame, sleeping with their heads downward. Great numbers are often to be seen in the shops of the Calcutta bird-dealers. They are popularly known as "Love-birds;" a name which is also applied to the birds belonging to *Agapornis* of Africa, *Psittacula* of S. America, and to the small *Trichoglossus pumilus* of Australia.

Other species of *Loriculus* are *L. galgulus* from the Malay peninsula; *L. asiaticus* (*indicus*, Auct.,) from Ceylon; and several others from China, the Philippines, and the Eastern islands.

Psittinus Malaccensis is the only other species of Parrot found in the Malayan peninsula, not previously noticed. It has a large bill, well toothed, and moderately bulging, and the bird has very much the aspect of a *Palæornis* with a short tail. The true Lories are chiefly from the Moluccas and N. Guinea, and group into two principal divisions; 1st, *True* Lories, with shortish square tails, from the Moluccas; and 2nd, *Trichoglossus*, chiefly from Australia. All of them feed on the juices of flowers and soft fruits.

The *Platycercinæ* of Australia are chiefly ground-birds, of rich and gorgeous plumage, which feed much on seeds and grains. They usually have the tail lengthened and broad, and the tarsus also long; and they are very quick in their movements.

The Cockatoos, *Cacatuinæ*, consist of two great divisions—1st, the white Cockatoos, with large crests, from the Moluccas and Australia; and 2nd, the Black Cockatoos of Australia and neighbouring isles, forming the genera *Microglossum* and *Calyptorhynchus*; remarkable, the former for its large, toothed, upper mandible, and the small lower one—the latter for its short, but very deep and curved, bill, and naked face. Both of these are crested, and of dark or black plumage, sometimes relieved by deep red or yellow

on the tail. They feed on bulbous roots, as well as on fruit and grain. The *Nestorinæ* have the upper mandible more lengthened than in any other Parrots, the tail square, of moderate length, with the tips of the shafts bare. Their plumage is dingy; and, in many respects, they approach the black Cockatoos, but are placed by Bonaparte among the true Parrots.

The *Psittacinæ* are chiefly distinguished by their short and even tail. They have a moderately lengthened, strong bill, and grade on one side towards the Cockatoos, and on the other towards the Lories. They are found in both continents, many in Africa (among others the well known Grey Parrot), and in S. America; a few also in the Eastern Islands.

The Maccaws comprise two groups; one the true Maccaws, of very large size and with long tails and gorgeous plumage, some of them blue and yellow, others red and blue, &c.; the other, *Conurus*, smaller, more like *Palæornis*, and usually green, with various markings.

Fam. PICIDÆ, Woodpeckers.

Bill moderate or long, straight, angular, wedge-like; tongue long, extensile; wings moderate, or rather long; tail of twelve feathers, ten of them with the shafts thick and stiff, the outermost pair minute; feet with the toes in pairs; one toe sometimes wanting.

The Woodpeckers are a well known group of birds, distributed all over the world, except in Australia and Polynesia. Most of them are more or less crested. Their plumage is varied, some black and white, others green, some rufous or bay, and a few golden-yellow. The male is almost always distinguished by a crimson crest, or tuft, or cheek-stripe. Their bill is long, or moderate, usually straight, more or less conic, and compressed towards the tip, which is often truncated, the sides generally with raised narrow and angular, ridge sometimes smooth and rounded. The nostrils are, in some, concealed by tufts of hairs, in others almost apert. The wings are moderate, long in some, always broad and firm in their texture; the 4th and 5th quills being usually the longest; the tail is generally wedge-shaped; the two central feathers being more or less elongated, and the stems very strong, stiff, and

elastic, to support the body when climbing. The two outermost feathers are soft and almost rudimentary, but are more developed in two of the sub-families. The outer posterior toe, sometimes called the versatile toe, and the outer anterior (or middle) toe, are long, and all the claws are much curved.

The tongue is long, vermiform, furnished at the tip with retroverted spines, and by means of the action of the elastic cornua of the hyoid bone, which are greatly elongated, it can be thrust far out of the bill. It is also supplied with a viscid mucus, secreted by the large salivary glands. When the tongue is retracted it is by means of muscles, which wind round the trachea like ribands, the horns of the os hyoides sliding round the skull beneath the skin, nearly to the base of the upper mandible, and the sheath of the tongue corrugating into folds at the bottom of the throat. The stomach is almost membranous, and they have no cœca. The sternum has a double notch on each side; the furcula is closed, but not joined to the sternum; the cervical vertebræ are very strong, and the last caudal vertebra is unusually large, with a spinous process, and a pentangular disk on its lower surface. This is evidently to support the tail, which becomes an organ of locomotion in this family.

Woodpeckers are pre-eminently climbing birds, making their way up the perpendicular stem of a tree, with great rapidity, pressing their stiff tail against the bark. They cannot, however, make their way down a tree, like the Nuthatches; but, if they wish to descend a short distance, they can only do so obliquely with the tail downward. They live chiefly on insects, and especially larvæ, which they discover by tapping on the tree; and when they find a hollow spot, they dig vigorously into it with their powerful bills, aided by their long neck, and the way the head is set thereon. Their long tongue is able to penetrate deep into holes and crevices, and by means of its barbed extremity and the glutinous saliva with which its tip is covered, they are enabled to bring out both large and small larvæ and insects. A few of the Woodpeckers feed habitually on the ground on ants and other insects, and some (the Piculets) appear to hop about brushwood and fallen trees. Some of the American Woodpeckers eat nuts, fruit,

and even (it is said) eggs. They all breed in holes of trees, laying several shining white eggs. They are mostly denizens of the forest; a few only, in India, frequenting gardens, groves and avenues.

Woodpeckers are called, in the South of India, *Lakhar-phor*, H.; *Kat-tokra*, in Bengal; *Kat-barya* at Mussooree; *Sat-ranga* at Muttra; *Manu-tolachi*, Tel., and *Marram tolashi*, Tam: all of these names signifying wood-splitters, or tree-chippers. Some Telugu shikarees call them *Siruta-pachi*, *i. e.*, the "castanet-bird," from their quick rapping on trees. The Lepchas alone, of any race I have come across, have distinctive appellations for several species.

The relations of this family with others of the tribe are not very clear. Some suppose that they join the *Cuculidæ* by means of *Yunx* and *Indicator*. Other systematists maintain their affinity to the *Megalaimidæ* or Barbets, and, indeed, class them together: but, in both cases, many links are wanting, and they are nearly as isolated a family as the Parrots.

Woodpeckers are divided into several subfamilies, differing in the form of the bill, the strength of the feet, and the mode of coloration.

Sub-fam. PICINÆ, Gray.

Bill perfectly wedge-shaped, compressed; culmen straight; the lateral ridge well marked, more or less median; gonys long; the outer posterior toe longer than the anterior one; wings rather long.

The typical Woodpeckers are birds of black and white plumage, and mostly of small or median size.

Gen. PICUS, L., as restricted.

Syn. *Dryobates*, Boie and Gray: *Dendrocopus*, Swainson.

Char.—Bill moderate, compressed, with the culmen straight and sharp; the lateral ridge distinct, midway between the culmen and margin, and joining the margin about its middle; gonys long, barely angulated; versatile toe longer than the anterior.

The birds of this group have the plumage above black, sometimes spotted or banded with white, and more or less streaked below.

154. **Picus Himalayanus**, J. and S.

JARD. and SELBY, Ill. Orn., pl. 116—BLYTH, Cat. 287—HORSF., Cat. 980.

The Himalayan Pied Woodpecker.

Descr.—Plumage above black; a large white bar on the wings, formed by the median wing-coverts and some of the scapulars; quills with small white spots on their outer webs, and large spots on their inner webs; tail with the central feathers unspotted black; the two outermost feathers, on each side, white with black bars; the next pair with some white bars on the outer web only; beneath, the plumage is sullied or rufescent white; and the under tail-coverts are crimson; head, in the male, albescent in front, the cap mottled red and black, the tips of the feathers being crimson, though entirely black in the female; lores, round the eye, and the lower ear-coverts, white; a black stripe from the base of the lower mandible, extending behind the ear to the nape and down the sides of the neck, the white of the sides of the neck running parallel to, and behind this, and forming a demi-collar posteriorly.

Length, about 10 inches; wing $5\frac{1}{2}$; tail $3\frac{1}{2}$; bill at front $1\frac{1}{4}$; stretch of foot $1\frac{7}{8}$th.

This Woodpecker is very similar to *P. major* of Europe, but the white bars on the primaries are much narrower than in that species, and the black markings on the sides of the neck are less developed and also less strongly defined, not descending so low on the breast, where a ferruginous stain is always perceptible, and the upper third of the ear-coverts is black, instead of being wholly whitish as in *P. major*. The latter, too, at least the adult male, has merely an occipital crescent, instead of the entire crown, crimson.

It has only, as yet, been procured from the North-west Himalayas, and is said to be pretty common in Cashmere. Adams, indeed, states that it is common over all India; but that is evidently some mistake.

P. assimilis, Natterer, from the Himalayas, is probably the same as this. It is stated to differ from *P. major* chiefly by its white scapulars.

155. Picus majoroides, Hodgson.

Gray, Zool. Misc., and Cat. of B. of Nepal—Dendrocopus Darjellensis, Blyth, J. A. S. XIV, 196—Blyth, Cat. 289—

HORSF., Cat. 982—P. Hodgsoni, MALHERBE—*Sadyer prep-pho*, Lepch.

THE DARJEELING BLACK WOODPECKER.

Descr.—Above black, with some of the scapulars, and the tips of the greater wing-coverts, white, forming a white bar; wings with small white spots on the outer webs, and larger ones on the edges of the inner webs; tail, with the three outer feathers more or less irregularly banded with white; forehead, and round each eye, white; ear-coverts yellowish-white; sides of neck, and under surface of the neck in front, and breast, pale isabella colour; a black irregular line from the base of the lower mandible, running down the sides of the neck towards the shoulder of the wings; breast and abdomen isabella-colour, blotched with longitudinal streaks of black, paler and albescent on the sides, and on the lower abdomen; under tail-coverts pale crimson; hind-head of the male crimson.

Bill and feet plumbeous; irides red-brown. Length 8 inches; wing $4\frac{3}{4}$; tail $2\frac{7}{8}$; bill at front $1\frac{1}{4}$; foot $1\frac{3}{4}$.

This appears to be the representative, in the South-east Himalayas, of the *P. Himalayanus* of the North-west. It has been found in Nepal and Sikim, in the latter country from 4,000 to 8,000 feet and upwards; but it is not very common about Darjeeling.

One specimen, in the Museum, As. Soc., Calcutta, from Nepal, has the black streaks of the lower surface much more developed than usual, so that the lower parts appear almost black; and the isabella tint of the lower surface varies a good deal in intensity in different individuals.

156. Picus cathpharius, HODGSON.

J. A. S. XII, 1006—BLYTH, Cat. 296—HORSF., Cat. 986—*Sadyer prep-pho*, Lepch.

THE LESSER BLACK WOODPECKER.

Descr.—Upper parts black, with a small white wing-patch, and a series of white spots on both webs of all the alars; lores, round the eye, and ear-coverts, in great part white; a black stripe from

the base of the lower mandible down the sides of the neck; two outer tail-feathers barred with white; the next spotted on the outer web only; chin whitish; the rest of the lower parts fulvescent, darker and rusty on the breast, and with longitudinal black streaks on the sides of the breast, the whole lower breast, abdomen, and under tail-coverts; in males the spots on the breast coalesce into a crimson gorget; the occiput, also, being crimson in the male, which colour extends behind the ear-coverts to the black streak, and tends to be continuous with the gorget; the female wants the crimson of the hind-head and gorget, and has the lower parts generally whiter. One female, however (at least a specimen with a black head), in the Museum, As. Soc., Calcutta, has an indication the crimson pectoral band.

Bill bluish-white; legs plumbeous; irides red-brown. Length 7 inches: wing 4; tail $2\frac{1}{2}$; bill at front $\frac{7}{8}$; foot $1\frac{1}{2}$. The tail is less rigid and pointed than in the two previous species.

This Woodpecker, which has somewhat of the general appearance of *P. minor* of Europe, has only been found in the South-east Himalayas, in Nepal, Sikim and Bootan. It is not rare at Darjeeling, and inhabits nearly the same zone as the last.

We next come to a group which has the upper plumage banded or spotted with white.

157. **Picus Macei**, Vieill.

Temm., Pl. Col., 59, f. 2—Gray and Hardw., Ill. Ind. Zool., 1, pl. 32—Blyth, Cat. 293—Horsf., Cat. 984—Dendrocopus pyrrhiceps, Hodgs.

The Indian Spotted Woodpecker.

Descr.—Plumage above, including the wings, black, with white bars; tail with the central feathers unspotted; the two outermost, on each side, white-banded, and the next partially so; lores, cheeks, round the eye, ear-coverts and sides of neck, almost encircling it behind, fulvescent-whitish; the whole lower-parts fulvescent; a narrow black band from the base of the lower mandible along the sides of the neck, lost in some oval spots which are

faintly continued along the flanks; as dusky streaks, increasing as in width on the vent and thigh coverts.

Bill dusky-plumbeous, reddish beneath; feet plumbeous; irides brown. Length 7 inches; wing $3\frac{3}{4}$; ext. 12; tail $2\frac{1}{4}$; bill at front $\frac{13}{16}$; foot $1\frac{7}{10}$.

The Indian Spotted Woodpecker is found through Northern India to the base of the Himalayas, extending into Assam, Burmah, the Malay peninsula, and (according to Layard) to Ceylon; but it is not found in Southern nor in Central India. It is very common about Calcutta, and I have frequently seen it in the Botanic Garden there: Mr. Blyth tells me that it is equally common at Akyab.

158. Picus Scindianus, Gould.

Moore, Horsf. Cat. 981.

THE SCINDE PIED WOODPECKER.

Descr.—Somewhat allied to *P. medius* of Europe (*i. e.* black above, with a white wing-patch, the quills spotted with white, and beneath white, with the flanks and under tail-coverts rosy); but it is smaller, the flanks are not suffused with rosy, and there is a broad black streak from the base of the lower mandible down the sides of the neck.

Length $7\frac{1}{2}$ inches; wing $4\frac{3}{8}$; tail $3\frac{3}{8}$.

This Woodpecker has only hitherto been found in Scinde.

159. Picus brunneifrons, Vig.

Vigors, Proc. Z. S. 1831—Gould, Cent. Him. Birds, pl. 52—Blyth, Cat. 292—Horsf., Cat. 988.

THE BROWN-FRONTED WOODPECKER.

Descr.—Male, forehead brown; top of the head golden-yellow; occiput crimson; the rest of the plumage above black, with white bars; tail, with the centre feathers, black; the two outer, on each side, banded with white; the lores and ear-coverts, pale brown; a small white stripe behind the eye; a streak of white from below the ear-coverts, passing round them to the sides of the neck,

where it expands, forming a large patch there; and below this a blackish-brown streak from the lower mandible along the sides of the neck; beneath, the plumage is sullied white, with longitudinal brown streaks; the vent and under tail-coverts pale roseate-crimson.

Bill plumbeous-white. Length 8 to 8½ inches; wing 4½; tail 2¾; bill at front ⅞; foot 2¾. The central tail-feathers slightly exceed the others.

The Brown-fronted Woodpecker has been placed with *P. Mahrattensis* as *Leiopicus*, Bonap.; but though allied to that species by its coloration, it is structurally more like *P. Macei*. It has been found in the North-west Himalayas, extending on the East to Nepal, but it has not yet been found in Sikim. Col. Tytler tells me that it is abundant at Mussooree and Simla, entering gardens, and destroying fruits, such as pears, &c.; and that it has a soft rolling whistle.

The next species has some slight points of distinction from the previous birds, and has been separated as *Leiopicus*, Bonap.; but I will merely point out the distinctive marks, without adopting the generic name. The bill is slightly lengthened; the lateral ridge short and inconspicuous; the culmen not quite straight; the gonys short, and the central tail-feathers are spotted.

160. Picus Mahrattensis, Latham.

Gray and Hardw., Ill. Ind. Zool., pl. 32, f. 62—Gould, Cent. Him. Birds, pl. 51—Sykes, Cat. 124—Jerdon, Cat. 207—Blyth, Cat. 291—Horsf., Cat. 987—P. hæmasoma, Wagler—P. aurocristatus, Tickell (the female).

The Yellow-fronted Woodpecker.

Descr.—Plumage above, wings, and tail, black, banded with white; forehead and top of head pale yellow; occiput bright crimson in the male, yellow in the female; lores, around the eyes, ear-coverts, sides of neck behind the throat, and middle of the neck and breast, white; a brown stripe, commencing near the nape, down the sides of the neck and breast; breast and abdomen brown, with pale

edges to the feathers; a patch of crimson on the centre of the abdomen, continued to the vent.

Bill slaty-plumbeous; legs cinereous; irides crimson.

Length $7\frac{1}{2}$ to $7\frac{3}{4}$ inches; wing $4\frac{3}{8}$; tail $2\frac{1}{2}$; bill at front 1; foot $1\frac{3}{4}$.

This Woodpecker is very generally spread through India and Ceylon, having been found in almost every district up to the foot of the Himalayas, except in lower Bengal, though common in the Midnapore jungles. It is, however, by no means abundant, except in a few localities, and is somewhat locally distributed. It is rare on the Malabar coast. I found it most plentiful in a patch of thin tree-jungle near Wulliar in the gap of Coimbatore, and it is by no means rare in the jungles of Central India. Colonel Sykes states that, though it is called the Mahratta Woodpecker, he never saw it but once. Adams, however, says that it is common about Poonah, and also in Sindh, but that it is not found in the Punjab. I have observed it most frequently in thin forest jungle, occasionally in gardens and groves, and once in bushy ground on the edge of the Neilgherries. This species has a squeaking note. A very closely allied race occurs in Upper Burmah, *P. Blanfordi* of Blyth.

Other Eastern species of *Picus* are *P. atratus*, Blyth, from Burmah; *P. andamanensis*, Blyth, from the Andaman Islands; *P. analis*, Tem., from Java; *P. Cabanisi*, Malh., from China; and *P. pectoralis*, Blyth, the precise habitat of which remains to be ascertained.

Adams records (No. 37, Birds of Cashmere,) that he once saw a Woodpecker about the size of the Lesser Woodpecker, with the head white, neck and breast bluish-black, belly and vent red. (Qu. *Sitta leucopsis.*)

Gen. Hypopicus, Bonap.

Char.—Bill slightly lengthened, slender; the lateral ridge inconspicuous; gonys very long, barely angulated; wings long; tail long; its two centre-feathers elongated; the feet rather short; hind-toe barely longer than the outer toe; lower plumage chesnut-bay.

This division was instituted for the present species, which is its sole member. It is remarkable for having the upper plumage of

a *Picus*, and the lower plumage of a *Venilia*, or *Micropternus*; to the former of which it is also somewhat allied in the form of its bill.

161. Hypopicus hyperythrus, Vigors.

Picus, apud Vigors, P. Z. S. 1831—Gould, Cent. Him. Birds, pl. 50—Blyth, Cat. 295—Horsf., Cat. 989.

The Rufous-bellied Pied Woodpecker.

Descr.—Above black, with white bars; beneath rufous-bay: lores, round the eyes, and anterior part of the ear-coverts, chin, and cheeks, whitish; ear-coverts posteriorly, and the sides of the neck, also bay; head and nape of the male crimson, extending along the sides of the neck, and sometimes also on to the breast, forming a sort of gorget; that of the female black, with white lines.

Bill black above, whitish beneath; legs plumbeous. Length 9 inches; wing 5; tail $3\frac{1}{2}$; bill $1\frac{1}{10}$; foot nearly $1\frac{7}{8}$.; central tail-feathers considerably elongated.

This Woodpecker has been found throughout the whole extent of the Himalayas, but is comparatively rare in the South-east. I did not myself procure it at Darjeeling, although it has been obtained there.

Gen. Yungipicus, Bonap.

Syn. *Tripsurus*, Eyton.

Char.—Of small size; plumage spotted, or banded, black and white above; bill barely straight; lateral ridge near the culmen; wings long; tail, with the two central feathers longest; the outer feathers soft and rounded.

This group of small Spotted Woodpeckers is peculiar to the Indian region, and contains several very closely allied species.

162. Yungipicus rubricatus, Blyth.

Blyth, Cat. 299—J. A. S. XIV, 197—P. pygmæus in part (olim), Blyth, as also Malherbe.

The Darjeeling Pigmy Woodpecker.

Descr.—Forehead and crown ashy-brown; hind-head and nape black, descending on the back of the neck, and expanding laterally;

a wide brownish-black streak, darkest posteriorly, passes backwards from below the eye; and between this and the hind-neck is a patch of white, beginning behind the eye, and ending abruptly; upper plumage black, with white cross-bands on the back, and the usual rows of white spots on the wings; the four middle tail-feathers wholly black, and the next pair white only on the exterior margin; outermost and penultimate tail-feathers barred on the outer web with white, and having a single white bar, or sometimes two, crossing the feathers towards its tip; upper tail-coverts spotless black; throat dull white; the rest of the under-parts brownish-white, with narrow dark central lines to the feathers. The adult male has a wide crimson occipital crescent.

Bill plumbeous; irides red; feet brown. Length $5\frac{1}{2}$ inches; wing $3\frac{1}{4}$ to $3\frac{3}{8}$; tail $1\frac{3}{4}$; bill at front $\frac{9}{16}$; foot nearly $1\frac{3}{8}$.

This species, the fully adult male of which differs conspicuously from the other members of the group, by its broad crimson occipital crescent, has only, as yet, been found on the South-east Himalayas, in Nepal and Sikim, where it is not very rare.

163. **Yungipicus pygmæus**, Vigors.

Picus, apud Vigors, P. Z. S., 183—Blyth, Cat. 300—Horsf. Cat. 991—P. trisulensis, Licht.—P. Mitchelli, Malherbe—Dend. moluccensis, apud Hodgson—P. zizuki, apud Gray, —Hodgs., Cat. Nep. Birds.

The Himalayan Pigmy Woodpecker.

Descr.—Above black, the head pale ashy, a little tinged with brown, and bordered laterally with black; from amid which colour appears the slight crimson sincipital tuft of the male: back striped as in the last: beneath whitish, purest on the throat; the rest pale earthy-brownish or albescent, marked with central dusky-brown lines; a brown streak from the eye along the sides of the neck, darkest posteriorly, and between this and the black of the head and neck, there is a long wide white band, from the summit of the eye, spreading laterally on the back of the neck, and almost meeting its fellow, and also joining the white of the sides of the breast; tail, with the central feathers pure brown-black, the two outer ones

on each side banded black and white, and the third edged with white on the outer web.

Length $5\frac{3}{4}$ inches; wing $3\frac{1}{2}$; tail 2; bill at front $\frac{9}{16}$; foot $1\frac{1}{4}$.

This species is found in the North-west Himalayas, extending into Nepal, but not into Sikim. The females of the last two can be readily distinguished from each other by the extent of the white patch on the sides of the neck.

164. **Yungipicus Hardwickii**, Jerdon.

Picus, apud Jerdon, 2nd Suppl., Cat. 209—P. Moluccensis, apud Gray, Hardw. Ill. Ind. Zool., pl.—Jerdon, Cat. 209 (not of Latham)—P. variegatus, Wagler, (not Latham)—P. cinereigula, Malh. *Chitta siruti pachi*, Tel.

The Southern Pigmy Woodpecker.

Descr.—Above brownish or sooty-brown, banded with white on the back; head pale rufescent or yellowish-brown, scarcely deepening posteriorly; beneath white, sullied on the abdomen, and with pale brown streaks throughout; a narrow white band from above the eye, down the side of the neck; a pale brown band from beneath the eye, below the white band, and another faint line beginning on the sides of the neck and being gradually lost in the markings of the breast. The male has a somewhat long and narrow orange-red streak, beginning considerably behind the eye.

Bill and legs plumbeous; orbitar skin lake; irides pale yellow.

Length 5 to $5\frac{1}{4}$ inches; ext. $9\frac{1}{2}$; wing 3; tail $1\frac{1}{2}$; bill at front $\frac{4}{10}$; tarsus $\frac{4}{10}$; foot $1\frac{1}{8}$.

This little Woodpecker is generally spread throughout the plains of India, from the extreme South to the North-west Provinces. It is a much smaller bird than either of the last two. It is found both in the open spaces of forest-jungle, in thin tree-jungle, and not unfrequently in wooded districts, in groves, gardens, and avenues. It frequents the branches of trees chiefly, both large and small; and, though it often climbs, it also frequently hops about from branch to branch, picking up various small insects and their larvæ.

I have reason to believe that another and darker-coloured species is found in the Malabar forests; but whether this may prove identical with one of the Himalayan species, or with the Ceylon bird, in particular, I cannot now ascertain*.

These small Woodpeckers perhaps lead direct to *Vivia* and *Sasia*, of the subfam. *Picumninæ.*

Other species of *Yungipicus* found in the East are *Y. Moluccensis*, from Malacca and Java; *Y. canicapillus*, Bl., from Burmah; and *Y. gymnophthalmos*, Bl., from Ceylon. The Burmese race much resembles *Y. Hardwickii*, but the color of the back is somewhat darker, and the head is lighter and more ashy. *Y. gymnophthalmos* is dark above, and unspotted beneath, and it may perhaps occur in Southern India (as before suggested). Other species are *P. scintilla*, Natt; said to be from the Himalayas. *P. maculatus* (*validirostris* of Blyth), from the Philippines (olim *P. nanus*, apud Bl.); and *P. zizuki*. T., from Japan.

Sub-fam. CAMPEPHILINÆ.

Bill strong, somewhat wide, nearly straight, or very slightly curving; lateral ridge near the culmen, sometimes wanting; gonys short; versatile toe about equal to the anterior, sometimes longer; hind-head generally with a full crest; neck thin; wings and tail various.

This sub-family appears to be intermediate between *Picinæ* and *Gecininæ*. They vary much in their colours, the length of the feet, and the proportions of their wings and tail, and consist of three or four well marked types. Gray retains the first two genera in *Picinæ*. They differ, however, somewhat from the typical Woodpeckers in form and coloration, in the length of their wings, and in their short broad tail; but the bill is very much that of true *Picus*.

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* The *Picus nanus*, Vigors, *Proc. Zool. Soc.*, 1831, p. 172, would seem to agree with *P. Hardwickii*, except that it is described to have a black occiput. It was from a Himalayan collection, but might, and not improbably, have been procured in the Deyra Doon.

Gen. HEMICIRCUS, Swainson.

Syn. *Micropicus*, Malherbe.

Char.—Bill straight, considerably compressed, the lateral ridge slight, near the margin; wings long, nearly reaching (when closed) to the end of the tail; tail very short, broad; neck short, very slender; feet very large; versatile toe always longer than the anterior one. This is a small group of very peculiarly-coloured Woodpeckers, of diminutive size and stout make, remarkable for having no red whatever its plumage.

165. **Hemicircus canente**, LESSON.

Picus, apud LESSON, Cent. Zool., pl. 73—BLYTH, Cat. 241—HORSF., Cat. 943—H. cordatus, JERDON, Cat. 206—JERDON, Ill. Ind. Orn. pl. 40 (the smaller Indian race).

THE HEART-SPOTTED WOODPECKER.

Descr.—Male, with the forehead and top of the head, a narrow line in the middle of the interscapular region, rump, shoulders, lesser wing-coverts, and a stripe from the lower mandible, running below the ears, of a light whitish-yellow; the wing-coverts and tertiaries with a black heart-shaped spot near the tip of each feather; face, cheeks, long occipital crest, nape, scapulars, quills, upper tail-coverts, and tail, deep black; tertiaries greenish; middle of the back dull blackish-green; beneath, chin and throat, whitish-yellow; from throat to vent dull blackish-green; under tail-coverts black.

Bill bluish-black; legs dusky-green; irides brownish-red.

Length $6\frac{1}{2}$ inches, wing $3\frac{5}{8}$ to 4; extent. 12; tail $1\frac{1}{2}$; bill at front $\frac{6}{10}$; foot $1\frac{7}{10}$.

The female differs from the male in having the forehead and head black, with minute whitish spots.

On the centre of the back is a brush of dark sap-green bristly feathers, smeared with a viscid secretion from a gland beneath.

This curious little Woodpecker is found in the forests of Malabar, generally on high trees, and in pairs, both above and below the Ghâts. I have lately found it in forests in the Chanda district, South-east of Nagpore. It also occurs in the Indo-chinese region, and there

is of rather a larger size, the bill $\frac{7}{8}$th of an inch long, the foot $2\frac{1}{8}$, and the rest in proportion, constituting it a distinct race: one of the numerous instances of parallelism of nearly allied races, more or less strongly distinguished, that inhabit the Eastern and Western sides of the Bay of Bengal, which very commonly amounts to this, that specimens from the two sides of the Bay are readily distinguishable. Another, and more decidedly distinct, species of this genus is the pretty little *H. concretus*, which is common in the Malayan peninsula.

Gen. CHRYSOCOLAPTES, Blyth, J. A. S. XII, 1004.

Syn. *Indopicus*, Malh.

Char.—Bill, much as in typical *Picus*, almost quite straight, strong; the lateral ridge medial at first, afterwards parallel to, and nearer, the margin; tail short, square; the four central feathers equal; feet strong; hind-toe longer than the anterior toe.

These are birds of rather large size, the head fully crested, and the colours being those of *Brachypternus* and *Chrysonotus.*

166. **Chrysocolaptes sultaneus**, HODGS.

Picus, apud HODGSON, J. A. S. VI., 105—BLYTH, Cat. 248—HORSF., Cat. 947—Picus strenuus, GOULD, apud MCLELLAND—P. strictus, HORSF., apud JERDON, Cat. 205—P. guttacristatus, TICKELL (the female)—*Tushi-warmbo-pho*, Lepch.

THE GOLDEN-BACKED WOODPECKER.

Descr.—Male, top of the head and crest, crimson; upper back and greater part of the wings externally, golden-yellow; lower part of back, shining carmine-red; band from the eyes, surrounding the forehead, ruddy-brown, passing through the eye, and changing into a wide black neck-stripe; above this, between it and the crest, is a narrow white line; the dorsal aspect of the neck also white; primaries wholly blackish, with three or four white spots on the inner webs of all the feathers; upper tail-coverts, and tail, black: beneath, the neck is anteriorly white, with five black gular stripes; breast black, more or less brunnescent, with large central drops of white;

the rest of the body, below, and lining of the wings, white, transversely barred with black.

The female has the cap black, with a white drop on each feather.

Bill and legs slaty, the latter with a greenish tinge; irides buffy-yellow. Length about $2\frac{1}{2}$ inches; extent 20; wing $6\frac{1}{2}$ to nearly 7; tail 4; bill at front $1\frac{1}{2}$ to $1\frac{7}{8}$; foot $3\frac{1}{8}$; weight 6 oz.

This fine Woodpecker is found throughout India, in hilly and wooded regions chiefly. I have observed it in Malabar, on the summit of the Neilgherries, and rarely in Sikim. Tickell found it in Central India, and Hodgson obtained it in Nepal. Mr. Blyth procures it occasionally in the vicinity of Calcutta. It likewise extends into Assam, Burmah, and the Malayan peninsula. I have seen it, occasionally, at a low level in Malabar; but it prefers hilly forests, and is tolerably abundant in the thick woods of the Neilgherries. It has a high-pitched, faint, screaming note; quite unlike the loud and harsh call of *Brachypternus aurantius*.

From Mr. Hodgson's description, it appears to attain larger dimensions in Nepal than elsewhere; for he gives the length as 15 inches, extent 23, and 9 oz. in weight. One that I procured at Darjeeling, however, did not differ materially from the smaller dimensions given above; and Mr. Blyth tells me that Mr. Hodgson's own Nipalese specimens were not larger than others from Bengal, Malacca, &c. The iris in this species, I have always found to be yellow. Hodgson says, carmine.

167. **Chrysocolaptes Goensis**, GMEL.

Picus, apud GMELIN—Dendroc. Elliotti, JERDON, Cat. 208—BLYTH, Cat. 249—C. melanotus, BLYTH, J. A. S. XII., 1005—JERDON, 2ND Suppl. Cat. 208—Pl. enl. 696.

THE BLACK-BACKED WOODPECKER.

Descr.—Crown and occiput of the male, splendid crimson; forehead, mingled black and white; lores white; a white streak begins behind the eye, and is continued to the nape, the entire hind-part of the neck being wholly white, and extending down upon the interscapulars; the rest of the back, the scapulars, rump,

and tail, are brownish black, having a slight aureous cast on the scapulars; wings, with their coverts and secondaries, bright golden-yellow; bend of the wing, winglet, and coverts of the primaries, as also the primaries, dusky black, with distant, large, round whitish spots on their inner webs, and similar dull spots on the outer webs; a broad black streak down the sides of the neck, from the eye; beneath the throat, white, with three black stripes; the rest of the body, beneath, more or less streaked; the feathers of the breast white, with black lateral edges, which last, gradually, all but disappear on the belly, vent, and lower tail-coverts.

Bill dusky-blackish; legs and feet horny-plumbeous; irides crimson.

Length $12\frac{1}{2}$ inches; wing $6\frac{1}{4}$; tail $3\frac{1}{2}$; bill at front $1\frac{7}{8}$ or 2; foot $2\frac{7}{8}$.

This handsome Woodpecker is found in various districts of the Peninsula and Central India, being rare in most parts, but common in a few localities. I have found it in the jungles of the Eastern Ghâts, in parts of Mysore, between Bangalore and the Neilgherries, in the Vindhyian mountains near Mhow, and in the hilly and jungly districts of Nagpore, between that and the Nerbudda. Mr. Elliott met with it in Dharwar, in the Southern Mahratta country, not far from Goa (whence it was originally sent), and it has been obtained in the Midnapore jungles; but it is alike absent in the Malabar forests and in the Himalayas. In most parts of the country, I observed it in thin forest-jungle; in one locality in a grove of palm-trees near a village. Mr. Elliot, too, found it in pairs, on cocoanut palms, often three or four pairs on the same tree.

Picus strictus, of Horsfield, from Java and Malayana, is very closely allied to *C. sultaneus*, being another member of this genus; as is likewise *P. hœmatrbion* of Wagler, from the Philippines, which is almost entirely crimson. *P. validus*, T., from Malacca, also belongs to this sub-family, but has been separated as *Reinwardtipicus*. This species, by its coloration, shows a tendency to *Venilia*.

Gen. MULLERIPICUS, Bonap.

Syn. *Hemilophus*, Swains.

Char.—Lateral ridge prominent, near the culmen, which is sharp and very slightly arched; gonys hardly half the length of the under mandible; toes short; anterior toe longer than the versatile one; claws very large; neck long and slender; head, with a short compact crest; wings and tail long, the latter cuneate.

This is a very well-marked and distinct group, and contains the giants of the family, so far as India is concerned, at all events. They are, mostly, of black or sombre plumage, in general more or less relieved with white.

168. **Mulleripicus pulverulentus**, Temm.

Picus, apud Temminck, pl. col. 389—Blyth, Cat. 244—Horsf., Cat. 945—P. Mackloti, Wagler (the female)—P. Javensis, feem, apud Horsfield (the male)—P. Horsfieldii, female, apud Wagl., (also the male)—P. Mackloti, Toyl. (the female).

The Large Slaty Woodpecker.

Descr.—Head and neck above ashy, suffused with white, as if powdered, especially on the forehead, lores and cheeks, and gradually disappearing on the hind-neck; the rest of the body above, wings and tail, dull slaty-ash; chin, throat, and neck in front, for a short distance, deep saffron-yellow, ending in a point on the middle of the neck; lower parts ashy, with whitish specks and streaks; vent, and under tail-coverts, spotless brownish-ashy: a dull crimson cheek-stripe alone distinguishes the male.

Bill, iris, and feet, blackish (Cantor).

Length 20 inches; wing $9\frac{1}{2}$; tail nearly 8; bill at front $2\frac{1}{2}$; foot $3\frac{3}{4}$.

This large Woodpecker has been found within our province only in the Dehra Doon; but it is stated to have been seen at Darjeeling. It inhabits Arrakan and Burmah, extending down the coast to Malaccca, Java, and other islands of Malayana. It is the largest of Oriental Woodpeckers.

169. **Mulleripicus Hodgsoni**, Jerdon.

Hemilophus, apud Jerdon, Cat. No. 213—Jerdon, Ill. Ind. Orn., pl. 5.

The Great Black Woodpecker.

Descr.—Head, with short thick crest, and stripe running from the base of the lower mandible, crimson; lower part of back, rump and middle of the belly, white; the rest of the plumage deep black.

Bill black; legs dark plumbeous; irides crimson.

Length 19 inches; wing 9; tail $7\frac{1}{2}$; bill at front $2\frac{3}{10}$, $\frac{1}{2}$ inch wide at base; tail much wedged; 6th quill longest.

The female has the forehead and the top of the head black; the occiput only being crimson.

This splendid Woodpecker has only been found in the most dense and lofty forests of the Malabar coast, both above and below the Ghâts. I have seen it myself, though rarely, at the foot of the Peria Pass, in the Wynaad, in Coorg, and at the top of the Ghâts near Garsoppa. It has, however, been also procured in Travancore, and in other localities. It is not a noisy bird; and it is very shy and difficult of approach.

Mulleripicus Javensis, Horsf., is a very closely allied species, from Malacca and the islands; and *M. Hodgei*, Bl., a fine wholly sooty black species, excepting the usual crimson marks about the head, has been found in the Andamans. Very recently also, another species has been found in Upper Pegu, which only differs from our bird in the much greater quantity of white underneath its wings.

Sub-fam. Gecininæ.

Bill widened, with the culmen more or less curved; lateral ridge very slight, or absent altogether; gonys short; feet small; hind-toe shorter than the anterior outer toe; the hind-toe, indeed, is always very small, and absent in some.

Gen. Gecinus, Boie.

Syn. *Brachylophus*, Swains.

Char.—Bill slightly widened in its whole length, compressed at the tip; upper mandible thickened at the base, with one or more slightly elevated lines (representing the lateral ridge), close to the culmen, which is very slightly arched; gonys very short; wings moderate; anterior and versatile toes nearly equal; hind-head,

with a narrow pointed crest; neck thick; tail rather long, cuneate.

This genus, founded on the *P. viridis* of Europe, comprises a number of nearly allied species, which are mostly green, with crimson *pileus* in the male sex; and chiefly differing in the markings of the lower parts. The four central tail-feathers are nearly equal; but the middle pair conceal the next.

170. **Gecinus squamatus**, Vig.

Picus, apud Vigors, P. Z. S. 1831—Gould, Cent. Him. Birds, pl. 48—Jard. and Selby, Ill. Orn., 108—Blyth, Cat. 260—Horsf., Cat. 958—P. dimidiatus apud Gray, Hardw., Ill. Ind. Zool., 1. pl. 29, f. 1.

The Scaly-bellied Green Woodpecker.

Descr.—Above green, the rump and upper tail-coverts tinged with yellowish; a narrow dingy white superciliary stripe extending as far as the nape, and a black line over this, continued narrowly across the forehead; ear-coverts dusky-greenish; cheek-stripe mixed black and white, and bordered by a pale line; wings and tail dusky-black, the former with the outer webs of the primaries white-spotted; the tail-feathers with white spots, or bars, on both webs; the bars on the secondaries and tertiaries pale greenish, and the whole of the outer webs of these more or less suffused with green, as are some of the medial tail-feathers; beneath, dusky albescent-greenish, pale on the chin and throat, and with a black line on each side; the abdominal feathers edged with black, imparting the appearance of scales: head of the male, with the crest on the nape and hind-neck, dull scarlet; of the female, black, the feathers margined with grey.

Young birds have the upper plumage more or less obscurely barred, and the colour of the lower parts is greener.

Bill dusky above at base, the rest yellowish; legs greenish-plumbeous. Length 13 to 14 inches; wing $6\frac{1}{2}$; tail $5\frac{1}{2}$; bill to front $1\frac{3}{4}$; foot $2\frac{5}{8}$.

This Green Woodpecker has only been found in the North-west Himalayas; extending as far as Nepal, but not to Sikim. Adams states that it is pretty common in Cashmere.

171. **Gecinus striolatus**, Blyth.

J. A. S. XII., 1000—Blyth, Cat. 261—Horsf., Cat. 962—Brachylophus squamatus, apud Jerdon, Cat. 210—2nd Suppl. Cat. 210—B. xanthopygus, Hodgs.—G. xanthopygius, Bonap.

THE SMALL GREEN WOODPECKER.

Descr.—Head and upper parts like those of *G. squamatus*, but the colours brighter; forehead and lores whitish, mixed with black; a small white eyebrow, with a black line above it, which is lost on the hind-head; ear-coverts mixed black and white; cheek-stripe inconspicuous, with a white line above it; entire under-parts whitish, streaked with dusky-green, more or less dark on the breast, and always greenish-black on the belly; on the throat and fore-neck, the feathers have each a mesial dusky-black line, widening on the breast, and dividing and becoming scale-like lower on the abdomen; caudal bars almost obsolete, except on the middle pair, and on the exterior web of the outermost pair in some specimens. Head crimson in the male; black in the female.

Bill horny above, yellowish at the base and beneath; feet greenish-slaty; irides pink, surrounded by a white circle. Length $11\frac{1}{2}$ inches; extent 17; wing $5\frac{1}{4}$; tail $3\frac{3}{4}$; bill at front $1\frac{2}{10}$; foot nearly $2\frac{1}{4}$.

This species differs from the last in being smaller and brighter-coloured, has the cheek-stripe less marked, and the scale-like markings of the abdominal feathers are less conspicuous, besides ascending up the breast.

The Small Green Woodpecker is found in the Himalayas, and in Central and Southern India. I have seen it in Malabar; in low jungle close to the sea-coast; in bushy ground on the Neilgherries, tolerably abundant, as also on the Eastern Ghâts. In the vicinity of Calcutta occurs rarely. It not unfrequently descends to the ground and feeds there, and often takes refuge on the horizontal branches of trees.

172. **Gecinus occipitalis**, Vig.

Picus, apud Vigors, P. Z. S. 1830—Gould, Cent. Him. Birds, pl. 47—Blyth, Cat. 263—Horsf., Cat. 963—Pic. barbatus, Gray

and HARDW., Ill. Ind. Zool., 1 pl. 31, f. 2 (the female)—*Mangliong-pho*, Lepch.

THE BLACK-NAPED GREEN WOODPECKER.

Descr.—Male, dull green above and below; rump tinged with pale yellowish; forehead and occiput dull scarlet; top of the head, a broad occipital stripe extending to the nape, and another on each side under the eyes, black; lores, face and ears, grey; wings and tail, dusky; the quills with white spots; the two central feathers of the tail striped with pale dusky on their outer webs, becoming dusky and greenish towards the base, and gradually obsolete; the outer webs of the last primaries, and of all the secondaries, green; chin, and part of throat, white.

Bill dark slaty; legs slaty, tinged with green; irides pale crimson.

Length 12½; extent 20; wing 6; tail 4½; bill at front 1½.

The Black-naped Green Woodpecker is found throughout the whole extent of the Himalayas, extending through Assam and Tipperah into Burmah, where also it is common. It is not rare at Darjeeling from 2,500 to 5,000 feet or so.

G. viridanus, Blyth (a duplicate of the Indian *G. striolatus*), abounds throughout the Burmese region; and other Asiatic species of *Gecinus* are *G. awokera*, T., from Japan, *G. Guerini*, Malh., from China (very like *G. canus* of Europe), *G. affinis*, Raffles, of Sumatra, and *G. dimidiatus*, Tem., of Java.

Gen. CHRYSOPHLEGMA, Gould.

Char.—Bill similar to that of the last, wider at the base and more compressed at the tip, slightly more curved, and shorter, with the lateral ridge nearly obsolete, only existing close to the base of the bill; the culmen blunt; tail long, cuneate; feet short; the claws very strongly curved.

The birds of this genus are further distinguished from those of the last by a peculiar mode of coloration, *viz.* the bright yellow of the hind portion of the full crest, which extends along the nape in some.

173. Chryspholegma flavinucha, Gould.

Birds of Asia, pl. 1, fig.—P. Z. S., 1833—Blyth, Cat. 265—Horsf., Cat. 965—Dryotomus flavigula, Hodgs., J. A. S., VI.—*Mang-chuk*, Lepch.

The Large Yellow-naped Woodpecker.

Descr.—Forehead and head reddish-brown, tinged with green on the occiput and nape; posterior nuchal feathers and back of neck glossy deep yellow; the rest of the upper plumage shining yellow-green; chin, cheeks, and throat, pale sulphur-yellow; ear-coverts greenish above, yellow beneath; neck in front and on sides blackish-green, picked out with pure white; body beneath dull dusky, greenish on the breast, passing into grey on the belly; the first seven primaries wholly igneous-cinnamon colour; the last three, and the secondaries, with five or six blackish cross-bars on both webs of the primaries, but only on the inner webs of the secondaries and tertiaries, which latter are green on their outer webs; tips of the primaries blackish-brown; tail-feathers pure black; the lining of the wings whitish, with black bars.

Bill bluish-white; legs slaty-green; irides red; orbitar skin pale green.

The female has the chin and throat reddish-brown, instead of yellow.

Length 14 inches; extent 21; wing $6\frac{3}{4}$; tail $5\frac{1}{2}$; bill at front $1\frac{3}{4}$; foot nearly 3; weight 7 oz. The tail is a good deal pointed.

This large Yellow-naped Woodpecker is found throughout the Himalayas, extending into Assam and Burmah. At Darjeeling I observed it chiefly in the zone from 2,000 to 6,000 ft.

174. Chrysophlegma chlorolophus, Vieill.

Picus, apud Vieillot—Horsf., Cat. 966—Picus Nipalensis, Gray, Hardw., Ill. Ind. Zool., I., pl. 31, f. 1—Gec. chloropus, apud Blyth, Cat. 266—Brachylophus sericeicollis, Hodgs.

The Lesser Yellow-naped Woodpecker.

Descr.—Top and sides of head, upper ear-coverts, and sides of the nape, dusky brownish-green; lores, and under ear-coverts

whitish, surmounted by black, over which, in the male, is a crimson superciliary streak, nearly meeting its opposite on the forehead, and continued backwards to the occiput, the crimson being confined to the occiput in the female; the male has also a mixture of crimson on his moustachial plumage; rest of the upper plumage bright green; the primaries are bright ruddy, externally margined with green, dusky with white spots on their inner webs; tail blackish; the central feathers margined with ruddy-green; beneath, the throat is whitish, with dusky tips to the feathers, increasing on the fore-neck; breast and upper part of belly, brownish-green; the rest of the lower parts dingy-whitish, with dusky-green cross-bars; wings beneath dusky, barred with greenish-white.

Bill dark slaty above and at the tip, pale yellow on the sides and beneath; orbitar skin slaty; irides red-brown; legs slaty-green.

Length $9\frac{1}{2}$ inches; wing $5\frac{1}{4}$; tail $4\frac{1}{2}$; bill at front 1 to $1\frac{1}{10}$; foot $2\frac{1}{2}$.

The Lesser Yellow-naped Woodpecker is common in the South-east Himalayas, extending into Assam; being rare in Lower Bengal, and found as far as Cuttack, so that it probably may occur in the Midnapore jungles.

175. **Chrysophlegma chlorophanes**, Vieill.

Picus, apud Vieillot—Blyth, Cat. 267—Pic. mentalis, apud Jerdon, Cat. 211—P. chlorigaster, Jerdon, 2nd Suppl., Cat. 211—Chl. xanthoderus, Malh.*

The Southern Yellow-naped Woodpecker.

Descr.—Male, with the whole head and cheek-stripe red; a small occipital crest of the same colour, shortly terminated by bright-yellow; plumage above bright green; ear-feathers, and beneath, dull sap or brownish green; the feathers of the lower abdomen banded and spotted with white; wings greenish, with an orange tinge, and the outer web of most of the quill-feathers deep orange-red; the inner webs dusky, with white spots; tail unspotted black.

* This is given as a synonym of the last by Horsfield; but Malherbe's specimens were from Madras, and he distinctly states it to be the species described by me, No. 211 of my Catalogue.

Bill slaty-greenish, yellow beneath; legs dull green; irides reddish-brown;

Length 9 inches; wing $4\frac{3}{4}$; tail $3\frac{2}{10}$; bill at front $\frac{9}{10}$; foot $2\frac{3}{8}$.

The female has the forehead and head green, and wants the red cheek-stripe.

This Woodpecker may readily be distinguished from the last, which it greatly resembles, by the whole occiput being crimson in the male; whilst in *chlorolophus* the sides of the occiput only are crimson, and the yellow feathers of the nape are more developed in that than in the Southern species.

It is found in the forests of Malabar, more especially far South, as in Travancore, and also in Ceylon. I have not seen it from the Eastern Ghauts, nor from Central India. It frequents thick forest-jungle. Mr. Layard states that he has seen it seeking its food on the ground, in dried cow-dung.

Other species of this group are *C. mentalis*, T., from S. Burmah and Malayana; *C. miniata*, Forster (*Malaccensis*, Lath.,) from Malacca; *C. puniceus*, Horsf., from S. Burmah and Malayana. These are placed by Horsfield under *Venilia*, but I think that they range better with *Chrysophlegma*. Bonaparte classes them as a separate section (*Brachylophus*, Strickl.,) of *Venilia*; but *miniata* is a true *Chrysophlegma*.

Gen. VENILIA, Bonap.

Char.—Bill long, nearly straight, much of the same width throughout, with a distinct lateral ridge from its base, extending two-thirds of the length, and bending down to the margin; culmen sharply ridged; wings long; tail rather short; the centrals pointed, and the laterals rounded and soft; feet large; posterior (outer) toe about equal to the medial; inner toe short; claws strongly curved. This is a remarkably plumaged genus; and were it not for its thick neck, I would have placed it with the *Campephilinæ*, with the members of which it agrees in the form of its bill, and large feet.

176. **Venilia pyrrhotis**, HODGS.

Picus, apud HODGSON, J. A. S., VI., 108—BLYTH, Cat. 271—HORSF., Cat. 972—*Phing-pho*, Lepch.

THE RED-EARED BAY WOODPECKER.

Descr.—Head, neck, and upper part of back, brown, merged more or less in dark vinous-red; forehead, ear-coverts, cheeks and chin, paler, and greyish or yellowish brown; wings, lower back, and tail, dark cinnamomeous or chesnut-red, transversely banded throughout with dusky-blackish; the breast, and body beneath, blackish-brown, with narrow chesnut bars on the thighs and tail-coverts; behind each ear is a brilliant crimson spot or patch, forming a wide demi-collar in the male.

Bill bright yellow; legs slaty-green, with yellow tinge; irides, red-brown; orbitar skin dusky-green.

Length 12 inches; extent 18; wing $5\frac{1}{2}$; tail $3\frac{1}{8}$; bill at front $1\frac{5}{8}$; tarsus 1.

This fine Woodpecker has been found only in the South-east Himalayas. It is not very rare at Darjeeling. *V. rubiginosa*, Eyton, from Malacca (*melanogaster* of A. Hay), is quite a miniature of our bird in structure.

To this sub-family also belong *Meiglyptes pectoralis*, from Malayana; *M. tristis*, from S. Burmah and Malayana, and *M. jugularis*, Bl., from Burmah. This last is coloured much as in *Hemicercus canente*, but makes no approach to it in structure.

Gen. GECINULUS, Blyth.

J. A. S., XIV., 192.

Char.—Bill still shorter than in *Gecinus*, more compressed laterally; feet still smaller; the inner (fourth) toe wanting; otherwise as in *Gecinus*.

This genus was founded on one species, that described below; since which an undoubted second member of the group has been discovered in Burmah, *G. viridis*, Blyth, one of the very numerous instances of duplicates (as they might be termed) of Indian species, inhabiting the eastern side of the Bay of Bengal.

177. **Gecinulus grantia**, McLELL.

Picus, apud McLELLAND, P. Z. S., 1839—BLYTH, Cat. 273—HORSF., Cat. 967—*Kih-pho*, Lepch.

THE PALE-HEADED WOODPECKER.

Descr.—Head and neck light yellowish-green, paler and more yellow towards the back; crown of the head dull crimson in the male; upper plumage brownish-red; the secondaries and tertiaries having three light red bars, and the primaries greenish-dusky, with four or five yellowish ones; tail dusky-greenish, the feathers edged with reddish and with yellowish bands; beneath, the chin yellowish; breast and abdomen dusky brownish-green.

Bill bluish-white, darker blue at the base; legs pale dusky-green; irides red.

Length 10 inches; wing 5; extent 17; tail $3\frac{3}{4}$; bill at front 1; foot $1\frac{8}{10}$.

This very peculiarly plumaged Woodpecker is found in the South-east Himalayas, extending into Assam. I found it not uncommon near Darjeeling, frequenting the zone from 2,000 to 5,000 feet. It has a squeaking note, which the Lepchas imitate in the name they give it.

The next three genera constitute perhaps a peculiar group, distinguished, among other points, by their still more feeble feet, the hind-toe being very small, and absent entirely in one genus, and the close-set feathers of the forehead advance to the base of the nostrils, supplying the place of the nareal bristles, which are apparently wanting entirely. That remarkably plumaged bird, *Picus Rafflesii*, Vigors, and named *Chloropicoides* by Malherbe, has the plumage and feet of some of this group, but the bill and nareal bristles are more of those of *Venilia*, and it belongs to the same division as that genus, or forms a link between the two.

Gen. MICROPTERNUS, Blyth, J. A. S., XIV., 196.

Syn. *Phaiopicus*, Malherbe; *Meiglyptes*, Sw. (pars).

Char.—Bill broad at the base; culmen arched; the sides slightly rounded; lateral ridge wanting; wings rather short; tail short and broad; feet small; versatile and anterior toes about equal; inner hind-toe and claw minute; the plumage of a peculiar chesnut-bay colouring.

178. Micropternus phaioceps, Blyth.

J. A. S., XIV., 195 and 551—Blyth, Cat. 277—Horsf., Cat. 974—Phaiopicus Blythii, Malh.—Ph. rufonotus, Bonap.—P. rufus, apud Gray—Hardw., Ill. Ind. Zool., pl. 29, f. 2.—Meigl. badius, and M. brachyurus, apud Hodgson.

THE BENGAL RUFOUS WOODPECKER.

Descr.—Plumage dark chesnut-bay, with black bands; head brown above, paling posteriorly, the feathers faintly streaked, and gradually merged on the hind-neck in the bay colour of the back; chin, cheeks, and throat, pale, the feathers of this last concolorous with the body, or nearly so, merely having lighter lateral margins; neck in front, breast and upper part of abdomen, bright chesnut-bay; from the middle of the abdomen the same, but paler, and with dusky cross-bands.

Length 9½ inches; wing 4¾ to 5; tail 2¾; bill at front 1; foot 2¼.

This species of Woodpecker is found in Kumaon, Nepal, and Sikhim, in Lower Bengal, and in some of the forests of Central India. I procured it in the Bustar jungle, South-east of Nagpore. It is not common in Sikhim, and keeps to the warm valleys, from 1,500 to 3,000 ft. elevation. It extends into Assam and Burmah. Tytler states that, in Dacca, it replaces the *Brachypternus aurantius* of Bengal, being the common Woodpecker of the place.

179. Micropternus gularis, Jerdon.

Jerdon, 2nd Suppl., Cat. 214—P. badius, apud Jerdon, Cat. 214.—Blyth, Cat. 278—Phaiopicus Jerdoni, Malherbe.

THE MADRAS RUFOUS WOODPECKER.

Descr.—Head dusky-brown; the rest of body rufous-bay, with cross-bars of dusky black; a crimson cheek-stripe in the male; chin, throat, lower side of cheeks, dark olive-brown; the feathers edged with white, giving a more mottled appearance than in the last species; lower parts unspotted bay; under tail-coverts faintly barred with dusky.

Bill blackish; legs slaty; irides brown; orbitar skin slaty.

Length 7 to 9 inches; wing $4\frac{8}{10}$; tail 2½ to 3; bill at front $\frac{9}{10}$; foot 2.

This Rufous Woodpecker is found in the forests of Malabar, both above and below the Ghauts, from the extreme south to N. L. 16°. It is generally found in forests; but I have seen it in avenues of trees, in cultivated ground not far from forest-jungle. Mr. Elliot, who obtained it in the Dharwar country, states that "it is remarkable for the head, scapulars, and tail, being generally smeared, probably from the gum of some tree." Mr. Blyth remarks the same of the Bengal species. A slightly darker race exists in Ceylon.

M. badius, from Malacca, is very closely allied, but is smaller; with the head lighter, the throat intermediate between the two Indian races, and it has the bars of the tail wider.

Gen. BRACHYPTERNUS, Strickland.

P. Z. S., 1841.—Syn. *Bramapicus*, Malh.

Char.—Bill distinctly curved, moderately compressed, and sloping on the sides; lateral ridge wanting; nostrils apert, but the frontal feathers produced to their base; gonys short; tail cuneate; the two central feathers longest; feet small; outer posterior and mid-toe nearly equal; hind-toe and claw minute.

180. **Brachypternus aurantius**, LIN.

Picus, apud LINNÆUS—BLYTH, Cat. 252—HORSF., Cat. 949—Brachylophus bengalensis, L., apud JERDON, Cat. 212 (in part)—Pl. enl. 695—P. nuchalis, WAGLER—Malacolophus melanochrysos, HODGS., and Br. igniceps, HODGS.—Picus hemipodius, SWAINSON, —P. tibetanus, NATTERER.

THE GOLDEN-BACKED WOODPECKER.

Descr.—Male, head and crest bright crimson; middle of the neck, behind, black; upper back and scapulars, rich golden-yellow; middle of the back, black, mixed with olive-yellow; lower back, uppertail-coverts, and tail, black; wing-coverts black at the shoulder, gradually changing to golden olive-yellow; each feather spotted with fulvescent-white; wings the same, externally, except the first quills which are black, as all are internally, and marked with large white spots on their inner webs; a stripe through the eyes and ear-coverts, mixed black and grey; lores, cheeks, and sides

of neck, white, forming a white stripe below the dark eye-streak; chin, throat, neck below, and breast, black, with white marks increasing in size on the breast, all the feathers being edged or scaled with black, diminishing in extent on the lower abdomen, which is almost white, and forming cross-bands on the flanks and thigh-coverts.

Bill slaty-black; irides red-brown; orbitar skin dusky-green; feet dark green; claws dusky.

Length 12 inches; extent 18; wing $5\frac{3}{4}$; tail 4; bill at front $1\frac{3}{10}$; extended foot $2\frac{1}{4}$; weight 5 oz. 2 dwt.

The female has the cap black, with small white triangular spots and streaks.

The Golden-winged Woodpecker is found throughout the greater part of India and Ceylon, but is replaced in some districts of the South by the next species. Adams states that it occurs in Sindh, the Lower Himalayas, and Cashmere; but with regard to the first-named province, see *B. dilutus*, page 297. In Ceylon it inhabits the northern region, being replaced in the south by another species. It inhabits alike thin forest-jungle, groves, gardens, and avenues, and is to be found about every large town or station. It has a loud screaming call, which it frequently utters as well when perched, as when flying in great undulations from tree to tree. It breeds, like all other Woodpeckers, in holes in trees, laying three or four white eggs. Philipps, indeed, states, though of course erroneously, that its eggs are light green.

181. **Brachypternus chrysonotus**, Lesson.

Picus, apud Lesson—Brach. puncticollis, Malh.—B. micropus, Blyth—Jerdon, 2nd Suppl. Cat. 212, bis.—Blyth, Cat. 252 in part—also of Jerdon, Cat. 212.

The Lesson Golden-backed Woodpecker.

Descr.—Very similar to the last, but smaller; the frontal feathers are more mixed with black in the male; the back of the nape is continued lower upon the shoulders, contrasting strongly with the golden-orange of the back; the wings are of a duller golden; the eye-streak is narrower, but darker and more strongly defined, and

it has the white spots smaller; the white markings of the throat and fore-neck are also smaller, and consist of round oval points, being edged on the sides of the neck by unspotted black; and, lastly, the white markings of the under parts are narrower, giving a generally darker hue to the breast and abdomen.

Bill dark slaty; legs plumbeous-green; irides crimson.

Length $11\frac{1}{2}$ inches; extent 17; wing $5\frac{1}{4}$; tail $3\frac{1}{4}$; bill at front $1\frac{1}{8}$; foot $1\frac{1}{8}$.

"There is," remarks Mr. Blyth, "a general neatness and well-defined character in the markings of this species, as distinguished from *Br. aurantius*, which arrests the eye at a glance." It is found in various parts of Southern India, in the Carnatic and Malabar, &c.; but I am not able to define its geographical distribution with precision, as I did not recognize its distinctness in the earlier periods of my travels. Malherbe states, that his specimens were from the slopes of the Neilgherries.

182. Brachypternus dilutus, Blyth.

J. A. S., XIV., 550.

The Pale Golden-Backed Woodpecker.

Descr.—Similar to *Br. aurantius*, but rather smaller, and differing conspicuously in the wing-coverts, which are more largely spotted with white, as are likewise the tertiaries; the eye-streak is less defined; there is a smaller amount of yellow on the back and wings, and it wants the orange tinge observable in the last two species; the quills, too, are broadly barred with white, which is seen conspicuously in the closed wing, whilst in the last two the white bars are narrow and inconspicuous; there is also a greater amount of white on the markings of the lower surface.

Length $10\frac{1}{2}$ to 11 inches; wing $5\frac{1}{2}$; tail $3\frac{1}{2}$; bill at front $1\frac{1}{8}$; foot $1\frac{1}{2}$.

This species was discriminated by Mr. Blyth from a single specimen of a female, sent by Sir A. Burnes from Sindh; and there is a drawing of a male of the same species among Sir A. Burnes's drawings now in the Library of the Asiatic Society, Calcutta.

Brachypternus ceylonus,* figured in my Illustrations of Indian Ornithology, has the back and wings dull crimson. It is common in the Southern part of Ceylon, and may yet be found in Travancore; and there is another species also found there, *Br. Stricklandi*, Layard, perhaps the *B. rufescens*, of Vieillot.

Gen. CHRYSONOTUS, Swainson.

Syn.—*Tiga*, Kaup: *Brachypternopicus*, Malh.

Char.—Bill much as in *Brachypternus*, but slightly more curved above, and having a trace of a lateral ridge near the base of the culmen; the sides less compressed; posterior toe, also, shorter than the anterior; inner hind-toe wanting; 4th quill longest; tail rather long, with the central feathers longest.

This is a small group belonging to India and Malayana, distinguished by having only three toes, and the plumage much as in the last, but with the lower back rich crimson, as in *Chrysocolaptes sultaneus* and the *Brachypterni*, instead of black.

183. **Chrysonotus Shorei**, VIGORS.

Picus, apud VIGORS, P. Z. S., 1831—GOULD, Cent. Him. Birds, pl. 49—BLYTH, Cat. 253—HORSF., Cat. 954—JERDON, 2nd Suppl. Cat. 215 bis.

THE LARGE THREE-TOED WOODPECKER.

Descr.—Head and crest crimson in the male, and in the female black with pale whitish long and narrow medial streaks to the feathers; forehead and lorese arthy-brown; back of the neck black; back, scapulars, and wings, golden-fulvous, with more or less of a crimson tinge; rump fine crimson; upper tail-coverts and tail black; primaries dusky-black; the inner webs of all the wing-feathers with large round white spots; beneath, the chin, middle of the throat, and breast, pale earthy-brown; the rest white, with black central marks on the feathers; a black line from behind the eye joining the back of the nape, and enclosing a post-orbital white line; a second narrow black streak from the base of the lower mandible, extending along the sides of the neck.

Bill blackish-slaty; legs plumbeous; irides crimson.

* There is a near resemblance of colouring between the *Brachypternus ceylonus*, and the Philippine *Chrysocolaptes hæmatribon*.

Length 12 inches; wing nearly 6; tail 4; bill at front $1\frac{2}{10}$ to $1\frac{3}{8}$; foot $2\frac{1}{4}$.

This Woodpecker is found in the Himalayas, and also in the hilly regions of the Malabar Ghauts. I have met with it on the slopes of the Neilgherries, up to above 5,000 feet of elevation.

184. **Chrysonotus intermedius**, Blyth.

Tiga, apud Blyth, J. A., S. XIV., 193—Blyth, Cat. 254—Horsf., Cat. 953—P. tiga, apud Gray, Hardw., Ill. Ind. Zool., pl. 30 f. 2—Jerdon, Cat. 215 (in part).

The Common Three-toed Woodpecker.

Descr.—Very similar to the last; the crimson tinge, however, does not extend over the upper back, and the black head of the female is marked with elongated white oval drops.

Length $11\frac{1}{2}$ inches; wing $5\frac{1}{2}$; tail $3\frac{3}{4}$; bill at front 1 to $1\frac{2}{10}$; foot $2\frac{1}{8}$.

This Woodpecker is found rarely in the Himalayas, extending into Assam and the Burmese countries, where it is extremely common, and Southward as far as Penang. It also occurs in Southern India, in the jungles of Malabar and the Eastern Ghauts.

185. **Chrysonotus rubropygialis**, Malh.

Brachypternopicus, apud Malherbe. P. tiga, Jerdon, Cat. 215 (in part)

The Southern Three-toed Woodpecker.

Descr.—Much smaller than the preceding; the black spots on the head of the female still rounder than in the last.

Length 9 inches; wing not quite 5; tail $3\frac{3}{8}$; bill at front $\frac{9}{10}$ to nearly 1 inch.

This species requires to be compared with the Malayan *C. tiga*; and I have unfortunately no Indian specimens at hand to compare with the latter. The bill appears to be smaller even that in that species. I obtained it in the extreme south of the Malabar forests in Travancore. Malherbe, in the Rev. Zool., 1845, describes this species as from Bangalore. It appears to correspond entirely with specimens collected by myself in Southern India; except that the back is, in the diagnosis, described as being cinnamo-

meous; while, in the description, he says 'lively red;' and he further states, that it closely resembles *C. tiga*, but is smaller. Malherbe describes his bird as 8½ inches long; wing 4¾; tail 3½; bill at gape not quite $1\frac{2}{10}$; which is slightly smaller than mine by measurement.

Sub-fam. PICUMNINÆ, Piculets.

Bill short, straight, somewhat conic; tail short or moderate, soft; wings long; tongue long, extensile; feet as in the true Woodpeckers.

The Piculets chiefly differ from the Woodpeckers by their diminutive size, and the soft broad feathers of the tail, which are twelve in number; and, as previously noticed, the members of the genus *Yungipicus* have the penultimate tail-feather soft, and thus may be said to grade towards the present group. Severals species are known; three being from the Indian region, and the greater number from America. They are said to breed in holes of trees, and to lay two (though probably a greater number of) white eggs.

Gen. VIVIA, Hodgs.

Syn. *Picumnus*, Temm., apud Swainson, Blyth, and Burton.—*Piculus*, Hodgs.

Char.—Bill moderate, straight, conic, compressed, acuminate; nostrils round, covered by incumbent setaceous plumes; tip of the upper mandible truncate, of the lower one pointed; rictus bristled; wings moderate, or rather long, rounded; 5th quill longest; 4th nearly equal to it; 1st quill very short; tail soft, very short and flexible, of twelve feathers; the six medial feathers being even, the six laterals graduated; outer posterior and anterior toes nearly equal; claws strong, large, sharp, and well-curved.

These little birds are nearly related to the Woodpeckers in their general anatomy; and their tongue is strictly *picine*.

186. **Vivia innominata**, BURTON.

Picumnus, apud BURTON, P. Z. S., 1835—BLYTH, Cat. 308—HORSF., Cat. 993—V. Nipalensis, HODGSON, J. A. S., VI., 107—Piculus rufifrons, HODGSON (the female)—*Wi-wi*, in Nepal—*Dang chim-pho*, Lepch.

THE SPECKLED PICULET.

Descr.—Above yellowish-green, duller and somewhat ashy on the head, nape, and ears, and bright on the back and on the edges of the secondaries; beneath white, tinged with yellow, ocellated with black from the chin to the breast, and from thence to the tail cross-barred with black; two white lines down the sides of the head and neck; frontal zone pale yellow; forehead chesnut in males, in females dark green; wings dusky-brown, devoid of bars internally; two central tail-feathers black on the outer web, white on the inner; the next four are wholly black; all the remainder being black, but whitish on their outer webs and tips.

Bill plumbeous; irides brown; legs plumbeous. Length 4 inches; extent $7\frac{1}{2}$; wing $2\frac{1}{4}$; tail $1\frac{1}{4}$; bill at front $\frac{5}{16}$; stretch of foot $1\frac{2}{8}$; weight $\frac{1}{2}$ oz.

This interesting little bird is found throughout the Himalayas, and in no other locality that I am aware of. Its range extends, so far as known, from 3,000 to 6,000 feet or so. It is found in tangled brushwood, and among dead and fallen trees in damp spots, hunting about among the decaying bark for various insects. It is said to breed in holes of trees.

Its nearest ally is the *Picumnus minutus* of Temminck, from South America and the West Indies, which is very similar in coloring, but has a stronger bill, with the head red on the forehead, black with white spots posteriorly, like so many Woodpeckers. There are several other species from the same region, as before remarked.

Gen. SASIA, Hodgson.

Syn. *Microcolaptes*, Gray—*Picumnoides*, Temminck—*Comeris*, Hodgs.

Char.—Much as in *Vivia*: bill somewhat longer and broader, its base more furnished with tufts of hair; wings equal to the tail; the 5th and 6th quills equal and longest; the feet three-toed; the hind being stout and large, about equal to the outer fore; the nails are long, straightish, and blunt.

187. **Sasia ochracea,** HODGSON.

J. A. S., V., 778—BLYTH, Cat. 310—HORSF., Cat. 995—*Sasya* of Nepal—*Chim-pho*, Lepch.

THE RUFOUS PICULET.

Descr.—Of a sub-ochreous colour throughout, darker and rufescent above, lighter and more yellow beneath; forehead, in the male, bright golden-yellow, with a greenish cap and wings; a narrow white streak from behind each eye; ear-coverts, below the white line, rufescent-brown; tail black, unmarked; lining of the wings buff.

Bill plumbeous; orbitar skin pink; irides pale brown; legs pale red. Length $3\frac{3}{4}$; extent 7; wing $2\frac{1}{4}$; tail 1; bill at front $\frac{7}{16}$; foot $1\frac{1}{8}$.

This little bird is found in Nepal and the Eastern Himalayas, as also in Assam, Sylhet, and Arakan. It is not rare at Darjeeling, from about 3,000 feet to 6,000 feet or so. Like the last, it chiefly hunts among the brush-wood, or more especially among fallen and decayed trees, near the banks of streams. It lives entirely on insects. I never saw it climb on large trees. It is said to breed in holes of trees.

A second species of this genus exists in Temminck's *Picumnus abnormis*, from Malayana, Pl. Col. 371, 3; which very closely resembles our bird.

Subfam. YUNGINÆ. Wrynecks.

Bill short, conical, somewhat round, straight, pointed; nostrils basal, approximate, near the culmen, narrow, pierced in the membrane, apert; wings moderate, pointed; 2nd and 3rd quills subequal, but 3rd the longest, first nearly as long, and 4th only a little shorter; tail moderate, flexible, broad, slightly rounded, or nearly even, of twelve feathers; the two outer small, as in the Woodpeckers; tarsus short, with the toes in pairs; posterior (outer) toe long, but equal to the anterior outer; hind and inner toes short; claws well-curved, and compressed.

The Wrynecks form a very remarkable group, composed of only one genus, and of a few species very closely allied to each other, of plain colours but beautifully speckled plumage. Their peculiar habit of turning and twisting their head backwards has caused names of similar meaning to be given to them in most languages. The tongue is round and vermiform, extensile, with a simple acute extremity. In their soft plumage, and some other points, they dictinctly approximate to the Cuckoos. Their flight is more direct and

swift than that of the Woodpeckers. They breed in holes of trees, laying several white eggs.

Gen. YUNX, L.

Char.—Those of the subfamily, of which it is the only genus.

188. **Yunx torquilla**, LINNÆUS.

Pl. Enl. 698—GOULD, Birds of Europe, pl. 233—JERDON, Cat. 218—BLYTH, Cat. 311—HORSF., Cat. 996—*Gardan eyengtha, H.*—*Meda nulingadu*, Tel.—(both names having reference to its twirling the neck).

THE COMMON WRYNECK.

Descr.—Above, a beautiful speckled grey, with a broad irregular line from the crown to the middle of the back, dark brown, with black stripes; lores whitish, and sometimes the chin; sides of the throat, cheeks, throat, and breast, pale buff-yellow, with narrow transverse bars; a brown stripe runs from each eye through the ear-coverts, extending along the side of the neck; and another, darker and narrower, from the base of the lower mandible down the sides of the throat; between these is a buff or isabella band, finally becoming albescent; breast and upper part of belly, fulvous-white with narrow cross lines, pointed anteriorly, and passing into small triangular black linear spots on the lower abdomen, vent, and under tail-coverts, which are whitish; the wings are fulvous-brown, minutely speckled, and with some fulvous spots, and a black longitudinal band on the scapulars; lower part of belly fulvous-white, with narrow cross-lines, pointed anteriorly, passing into small triangular black linear spots; the quills are barred with deep brown and isabella; rump and tail speckled grey, the former with black longitudinal streaks; the latter with three darker broad bands, and a fourth subterminal one.

Bill horny-brown; irides crimson; legs greenish-horny. Length $7\frac{1}{2}$ inches; wing $3\frac{1}{2}$; tail $2\frac{1}{3}$; bill at front $\frac{1}{2}$; tarsus $\frac{5}{8}$; weight $1\frac{1}{2}$ oz.

The Wryneck is found throughout India, except perhaps on the Malabar Coast, where I never saw it, nor heard of a specimen

being procured. I have obtained it at Madras, Nellore, Nagpore, Saugor, and Mhow; and it is not rare in Lower Bengal, and in the North-Western Provinces. It was sent by Hodgson from the sub-Himalayan region, and has been seen in Assam. It is chiefly, perhaps, a cold weather visitant in the South of India; but it is said to remain all the year further north. It does not climb trees, like the Woodpeckers, habitually at least; though it has been seen to do so rarely, and it then presses its soft tail against the bark. It feeds on various insects, chiefly ants, which it picks off the ground sometimes, or off the boughs of trees. Montague describes one feeding on an ant-hill as a very interesting spectacle. The tongue was directed forwards and retracted with extraordinary rapidity, and with such unerring aim that it never returned without an ant or a pupa adhering to it; and he described the motion of the tongue as so rapid, that an ant's egg (pupa), which is of a light colour and more conspicuous than the tongue, has somewhat the appearance of moving towards the mouth by attraction, as a needle flies to a magnet.

Its flight is tolerably speedy. It has a peculiar plaintive Kestrel-like call. It breeds in holes of trees, laying several polished white eggs. Mr. Blyth says—"Instinctively trusting to the close resemblance of its tints to the situations on which it alights, it will lie close, and sometimes even suffer itself to be taken by the hand: on such occasions, it will twirl its neck in the most extraordinary manner, rolling the eyes, and erecting the feathers of the crown and throat, occasionally raising its tail, and performing the most ludicrous movements: then taking advantage of the surprise of the spectator, it will suddenly dart off like an arrow."

189. **Yunx Indica**, Gould.

P. Z. S., 1849, p. 112—Gould, Birds of Asia, pl.

The Chesnut-throated Wryneck.

Descr.—Above pale brown, finely freckled with grey, and blotched, particularly down the back of the neck, on the centre of the back, and on the wing-coverts, with brownish-black; primaries brown, crossed on their outer webs with regular bands of deep

buff, and toothed on their inner webs with the same hue; remainder of the wing-feathers like the upper surface, but crossed by broad irregular bands of brown; tail with narrow bands; sides of the throat and neck with numerous narrow bars; on the centre of the throat, a spatulate mark of chesnut-red; centre of the abdomen and under tail-coverts, pale buffy-white, with a fine brownish-black streak down the middle of each feather.

Bill pale horny; leg yellowish flesh-colour. Length $7\frac{3}{4}$ inches; leg $3\frac{5}{8}$; tail $3\frac{1}{4}$; bill $\frac{7}{8}$ inch; tarsus $\frac{7}{8}$.

This species, from Affghanistan and Tibet, is probably found in Cashmere; but remains to be ascertained as an inhabitant of India. It is nearly allied to *Y. pectoralis* of S. Africa, and to *Y. æquinoctialis* of N. E. Africa.

Sub-fam. INDICATORINÆ, Honeyguides.

Bill high, Finch-like, short, sub-conic, straight at the gape, broad at the base, arched above, and compressed on the sides; culmen and gonys equally inclined towards the tip; gonys angulated; nostrils apert, placed in a fossa near the base of the bill, and pierced in the membrane, opening near the culmen; wings long, pointed; 3rd quill longest; 2nd sub-equal, and 1st only a little shorter; tail moderate, slightly wedge-shaped, of twelve feathers; the outermost pair short, as in the Woodpeckers; tarsus short; outer anterior toe the longest, much longer than the tarsus, which is short, as are the inner and hind toes.

The Honeyguides are chiefly from the South of Africa, two species only being Asiatic, so far as known. They have usually been classed with the Cuckoos, or near them; but Blyth considers them to be more nearly related to the Woodpeckers, which they resemble in the structure of their feet, and the tongue is said by Bruce to be sharp-pointed and extensile. Their skin is thick; and they have a distinct accessory plume to their feathers, which the Cuckoos have not. They are birds of small size and plain plumage. They have been described as guiding the natives to the nests of wild bees, uttering a peculiar cry, and flitting on before them to point out the honey, of which they always receive

a portion. It is more probable, however, that the object of the birds by their cries, when endeavouring to get at the honey, is to call others of their kind, and that the natives are thus guided to the spot. Their skin is said to be very tough, to guard them from the stings of the bees. It is asserted, nevertheless, that they are sometimes stung to death, having been found dead in the hives, covered over with a layer of wax. Their flight is described to be heavy, and continued only for a short distance at a time. This, I should think to be doubtful. The nest (if any) is made in holes of trees; and their eggs are white and shining, like those of the Woodpeckers.

Gen. INDICATOR, Vieillot.

Char.—Same as those of the sub-family, of which it is the only genus.

190. **Indicator xanthonotus**, BLYTH.

J. A. S., XI., 166, and XIV., 198—JERDON, Ill. Ind. Orn., pl. 50.

THE YELLOW-BACKED HONEYGUIDE.

Descr.—General plumage above, dark clove-brown; forehead tinged with yellow; lower back and rump bright yellow; beneath dusky brownish-ashy; some yellow on the chin, throat, and sides of the neck: sides of the rump and end of the upper tail-coverts passing to blackish; the thigh-coverts and under tail-coverts streaked black and white; tail with the centre feathers dark brown, some of the outer ones paler, and the outermost feather is broadly edged with whitish.

Length $5\frac{1}{2}$ inches; wing $3\frac{3}{8}$; tail $2\frac{3}{8}$; bill at front $\frac{1}{4}$; foot $1\frac{3}{16}$.

This Honeyguide has been procured very rarely in the S. E. Himalayas, in Sikim. Nothing is known of its habits; and the Lepchas, to whom I showed a drawing of the bird at Darjeeling, did not appear to recognise it, and certainly knew nothing of its honey-finding instincts.

I. archipelagicus, Temm., is from the islands of Malayana. Several species are found in Africa.

Fam. MEGALAIMIDÆ, Barbets.

Syn. *Capitoninæ*, Gray. *Bucconinæ*, Swains. (in part).

Bill stout, and somewhat conic, inflated at the sides, moderate in length or short, wide at the base, more or less compressed towards the tip; base of upper mandible continued backward to the gape, and usually furnished at the base with numerous stiff bristles projecting forwards; some have the mandibles denticulated, and grooved at the sides; culmen generally blunt; wings and tail short; the latter even, or nearly so, with the feathers soft, only ten in number; toes in pairs, the hind-claws much curved; tongue of ordinary structure.

This family is placed by Swainson and Gray, as a subfamily of *Picidæ*; but the very different general structure, short tongue, non-climbing habits, &c., warrant a higher separation.

They are birds chiefly from India; some are African; and a few S. American. They perch like ordinary *Insessores;* nestle in holes of trees, which I believe they excavate for themselves, though this has been doubted; laying two to four white eggs; and they live chiefly upon fruit.

Their plumage is generally bright and gay, and in texture resembles that of the Toucans of S. America; the feathers possessing the supplementary plume, as in that closely-allied family. In their anatomy, they are much more nearly related to the Toucans than to the Woodpeckers; and their feet are formed quite after the model of that family, to which Mr. Blyth even subordinates them.

Their clavicles are imperfect, and do not, in general, if ever, unite to form the furcula; in this remarkable point, also, agreeing with the Toucans. Their cranium is broad, angular, and weak; the sternum has the keel low, with two emarginations on each side; the œsophagus is wide, the stomach slightly muscular, and the intestinal canal is short and wide, without cœca. They have no gall-bladder. The tongue is long and thin, slightly barbed in some of the larger species.

The bill varies in length and degree of compression, and is toothed only in some African species. They have a tuft of bristles over each nostril, another at the angle of the gape, and one on the chin, and these vary in length in the different divisions. (These tufts are also seen in the Motmots.) The wings have generally the first, second, and sometimes the third, quills short, and the next three or four sub-equal; and their flight is moderately rapid, though never prolonged to any extent. The sexes appear to

be alike in all. They are tolerably lively and active; and live, in a wild state, almost exclusively on fruits and berries. All of the Indian species have green as the predominant or ground colour.* A genus has lately been discovered, *Tetragonops*, Jardine, which is said by Bonaparte to form a direct link between the Toucans and the Barbets; so that perhaps Mr. Blyth may be right in making the two groups as divisions of one natural family. The Barbets, however, have not that airy lightness of action so remarkable in the genuine Toucans, unless *Tetragonops* may prove an exception.

Gen. MEGALAIMA, Gray.

Syn. *Bucco*, Auct. (in part), and of most modern authors.

Char.—Bill moderate, about as long as the head, robust, conical, more or less wide at the base and compressed at the tip; culmen tolerably arched; upper mandible somewhat overlapping the lower one; gape wide; nostrils somewhat exposed, in a groove at the side of the culmen; wings moderate, rounded; tail short, nearly even; feet truly zygodactyle; conspicuous tufts of bristles surrounding the bill, a series of them above each nostril, a tuft at each angle of the gape, and another growing from the chin.

This genus comprises the largest birds of the family (as here restricted); and with the exception of the first bird, which is coloured peculiarly, they form a group of very closely allied species, some of which are not very readily distinguishable from each other, all having more or less brown heads, and green plumage.

191. **Megalaima virens**, BODD.

Bucco, apud BODDAERT—Pl. enl. 871.—BLYTH, Cat. 316—HORSF., Cat. 921—Bucco grandis, GOULD, Cent. Him. Birds, pl. 46—*Kaniong-pho*, Lepch.

THE GREAT BARBET.

Descr.—Whole head, nape, and neck, dusky violet-blue; a demi-collar of pale yellow on the hind-neck, separating the blue from the coppery-brown hue which clothes the upper part of the back, scapulars, and lesser wing-coverts; the lower part of the

* The Malayan *Megalorhynchus Hayi* constitutes one exception.

back, the rump, and upper tail-coverts are shining light grass-green; the greater coverts green, with a coppery gloss; the primaries blue-green, fading to dull blue externally; secondaries and tertiaries yellowish or sap-green, with a coppery gloss on the last of the secondaries and tertiaries; tail bluish-green; breast brown, passing into blue-green on the middle of the abdomen; sides of the breast and abdomen pale yellow, with brown blotches; vent, mixed light green and yellow; under tail-coverts crimson, as in most Toucans.

Bill yellow, pale in front, dusky at the edge of the upper mandible; irides brown; legs greenish-horny.

Length 13 inches; extent 18; wing $5\frac{3}{4}$; tail 4; bill at front $1\frac{3}{4}$; tarsus $1\frac{1}{4}$.

This species deviates from the others of this genus in the bill being wider at the base, and in the nareal and rictal bristles being fewer and shorter. It evinces a very distant affinity, or analogy, for the Trogons, and perhaps the *Eurylaimi*

This large Barbet is found throughout the Himalayas, as also in Assam, and it is said to inhabit China. In Sikim, I found it at from 3,000 to 8,000 feet of elevation, though most commonly, I think, at about 6,000 feet.

It has a loud plaintive call (*pi-o, pi-o, pi-o*), keeps to the tops of high trees, lives entirely on fruit, and has a strong and vigorous flight in great undulations. Capt. Hutton makes its call *hoo, hoo, hoo;* and states, but erroneously, that its flight is labored. Adams remarks that it is common in Cashmere on the lesser ranges, and that its cry is loud and harsh.

We have next a group of three or four very closely allied species, differing in size, and in some slight variations of colour; each race being confined to a certain locality. The voice, too, is similar in all, but also with sufficient variation to be easily made out, as distinct, in those species which I know.

192. Megalaima lineata, Vieill.

Bucco, apud Vieillot—Blyth, Cat. 317—Horsf., Cat. 922—B. caniceps, apud Hodgson—M. Hodgsoni, Bonap.—*Paharia Corul,* Beng.—*Dang kaniong-pho,* Lepch.

THE HIMALAYAN GREEN BARBET.

Descr.—Above, green; a paler green on the flanks and lower belly; vent, and lower tail-coverts, yellowish; head, neck, throat, breast and upper abdomen, whitish, confined on the crown of the head to an ill-defined medial streak on each feather, the rest being pale-brown; on the nape these streaks are contracted, and better defined, often upon a green ground; and they gradually disappear on the back; throat spotless whitish; sides of the neck, breast, and abdomen, with each feather, laterally margined with dusky-brown.

Bill orange horny-brown; naked orbits deep yellow; irides brown; legs dark yellow.

Length $10\frac{1}{2}$ inches; wing $5\frac{1}{4}$; tail 3; extent 18; tarsus 1; bill at front $1\frac{1}{8}$.

This Green Barbet is found throughout the whole extent of the sub-Himalayan region, not ascending the hills beyond 1,000 or 2,000 feet, and even that rarely. It extends also to (Dacca) E. Bengal, Assam, Sylhet, the whole Indo-Chinese region, and also (it is said) to Sumatra; but the bird from Sumatra (as alleged), upon which the name *lineatus* is founded, requires to be compared with Indian or Burmese specimens. Its voice is very loud. I procured it quite at the foot of the Himalayas, in the Sikim Terai.

193. **Megalaima caniceps**, FRANKLIN.

Bucco, apud FRANKLIN—BLYTH, Cat. 318—HORSF., Cat. 924—B. lineatus, apud TICKELL—B. viridis (in part), apud JERDON, Cat. 217—B. zeylanicus, apud JERDON, 2nd suppl., Cat. 217, bis—*Burra bussunta*, Beng.—*Kutumra*, H., in the Deccan—*Kudrunga*, Hindi, in Central India—*Cuturgá*, Mahr.—*Kutur haki*, Can.—*Gandu karnam*, Tel.

THE COMMON GREEN BARBET.

Descr.—General colour of *M. lineata*, but the brown much predominating over the whitish on the head, neck, and under-parts; the throat, more especially, being always dusky-brown, instead of whitish; the pale streaks to the feathers of these parts more reduced and narrow, and they are commonly more continued, though gradually

diminishing, upon the green of the back, whilst each wing-covert and tertiary has a whitish speck on the tip, never seen in *lineatus;* the foreneck and breast are almost uniform brown, with pale mesial streaks.

Bill pale orange-brown; iris red-brown; bare orbitar skin dull orange; legs light yellowish-brown.

Length $10\frac{1}{2}$ inches; extent 16; wing 5; tail $3\frac{1}{2}$; bill at front $1\frac{3}{8}$; tarsus $1\frac{1}{10}$.

This Green Barbet is found throughout the greater part of the peninsula of India. I have procured it in the Eastern Ghauts, also in Malabar, from Goomsoor, Central India, Nagpore and Chanda, the jungles of the Vindhian range of hills, and Bundelkund. Blyth obtained it in the Midnapore jungles, whence it extends through Chota Nagpore to Central India. It has also been found in the Dehra Dhoon.

Its loud cry is familiar to every sportsman, wherever its range extends, and is often quite startling. Like the call of the others of this group, it is something like the word *kùtùr, kotùr kotùr*, preceded by a harsh sort of laugh. They continue to call for some minutes at a time, and are heard at all hours, frequently indeed at night, especially when there is moonlight; hence several of the native names. Its usual food is fruit and berries, occasionally insects. Mr. Elliot, in his remarks, notes "one was shot pecking at the flowers of a tree." He further states, that on each side of the throat there is a naked spot with the skin wrinkled, which the bird probably contracts and expands when calling.

Megalaima zeylanica, Gmelin, from Ceylon, is very closely allied to this, and very possibly may replace it in the extreme south of India. It differs in its somewhat smaller size, the head, neck, and breast, being much browner, the pale central streaks being much reduced, and the light specks, on the extremity of the wing-coverts, are also reduced, and perhaps fewer in number.

Length $9\frac{1}{2}$ inches; wing $4\frac{1}{4}$; tail $2\frac{3}{4}$; bill at front $1\frac{1}{4}$.

194. **Megalaima viridis**, GMEL.

Bucco, apud GMELIN—BLYTH, Cat. 319—HORSF., Cat. 926—JERDON, Cat. 217 (in part)—JERDON, Ill. Ind. Orn., pl. 26—SYKES, Cat. 123.

The Small Green Barbet.

Descr.—Very similar to the last, but smaller, the brown of the head and nape scarcely lineated; that of the under parts pale, becoming whitish on the throat; there are no pale specks on the wing-coverts, nor any traces of pale streaks on the green of the back.

Bill pale horny-brown; irides red-brown; orbitar skin small, brown; legs plumbeous-brown.

Length 8 inches; wing 4; tail $2\frac{3}{4}$; bill at front not $\frac{15}{16}$.

This is the common Green Barbet of the Malabar coast, extending up the Neilgherries, where very common in the dense woods; and along the Malabar Ghauts as far as N. L. 14°. Its voice is not quite so loud as that of the last species. Its flight is, like that of the others of this genus, tolerably rapid, direct, and slightly undulating. It perches generally on the higher branches of trees. I have frequently heard both this and the last species calling by moonlight; and have always found fruit in its stomach.

I never saw any of these Barbets climbing, like a Woodpecker; nor heard them tapping, that I am aware of. Mr. Blyth declares positively, from familiar observation of them in an aviary, that they do neither the one nor the other.

Layard relates, of the *M. zeylanica* of Ceylon, that, in confinement, although it ate fruit greedily, it would yet eat raw meat, and devoured several little *Amadinæ* kept in an aviary with it. This is quite in conformity with what has been remarked of the S. American Toucans in captivity. Mr. Bennet describes in full detail the despatching of an unlucky Goldfinch by a caged Toucan.* All of the species build in holes of trees, laying three or four shining white eggs. Other species of *Megalaima* are *M. corvinus*, T., from Java; and *M. phaiostictus*, T., from Cochin China.

Gen. Cyanops, Bonap.

Char.—Bill shorter, less compressed than in the last genus; the head ornamented with bright colours; of moderate dimensions.

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* The Hornbills, also, as observed in captivity, are apt to evince a carnivorous propensity; of which the Rev. W. Baker relates a notable anecdote in the *Proc. As. Soc.*

This group is most developed in Malayana, only two species extending to our province.

195. Cyanops Asiatica, LATH.

Bucco, apud LATHAM—BLYTH, Cat. 325—HORSF., Cat. 931—Capito cyanicollis, VIEILLOT, Galerie des Oiseaux, pl. 35—B. cyanops, CUV.—B. cæruligula, HODGSON—*Burra bussunt bairi*, Beng.; also *Burra benebo*, Beng.; *Corul*, of Mussulmans in Bengal—*Suttra* of the plains (Tickell).

THE BLUE-THROATED BARBET.

Descr.—Green above, with a faint ruddy or coppery gloss on the back, paler and more grassy below; forehead, occiput, and a spot on either side of the base of the fore-neck, crimson; band across the crown, continued backward as an upper supercilium, black; cheek, ear-coverts, moustache, throat, and front of the neck, including a narrow lower supercilium, verditer-blue.

Bill greenish-yellow at the base, black at the tip; irides reddish-hazel; nude orbital skin tinged with orange; eyelids with a circlet of orange wart-like papillæ; legs greenish ashy.

Length $9\frac{1}{2}$ inches; extent $13\frac{1}{2}$; wing $4\frac{1}{2}$; tail 3; bill at front $\frac{15}{16}$; tarsus $\frac{7}{8}$.

The Blue-throated Barbet is found throughout Lower Bengal, extending through the sub-Himalayan region, as far as the Dehra Dhoon, also Assam and Sylhet, being rare in Arakan. It is common above Calcutta to Barrackpore; and I observed it all through Lower Bengal, from Calcutta to the Sikim Terai; and it is found in some of the warmer valleys in the Sikim Himalayas. Buchanan Hamilton states that it breeds in holes in trees, which it excavates itself. "The name *Bussunt bairi*," says he, "signifies the old woman of the spring." Tickell describes a nest made of grass, and placed in a Mowa tree, as belonging to this species; but of exceedingly doubtful origin, I imagine. Pearson states that it has two broods in the year.

It is rather a noisy bird, with a very peculiar call, which Sundevall endeavours to imitate by the word *rokuroj-rokuroj*: and it is syllabilized by Mr. Blyth as *kuruwùk, kuruwùk, kuruwùk.*

It is more subdued than the call of the last group; but still considerably like it, without the preliminary cachinnation. It hops actively about the branches of trees; and lives entirely on fruit, which Sundevall said that he found always broken asunder.

196. Cyanops Franklinii, Blyth.

Bucco, apud Blyth—Blyth, Cat. 326—Horsf., Cat. 932—B. igniceps, Hodgs.—*Kattak-pho*, Lepch.

The Golden-throated Barbet.

Descr.—Above, vivid green; beneath, paler and more yellowish green; edge and shoulder of wing deep blue; first primaries blue externally, the last do., and secondaries, green, all black within, and with a pale edging on the inner web, forming a large pale spot beneath; forehead and middle of occiput crimson; crown and throat bright glistening orange-yellow; some crimson at base of the lower mandible; round the eye black, continued backwards over the eye to the sides of the occiput, where it is edged with green; ear-coverts pale brown, mixed with green and blue; the sides of the neck, from the ear-coverts, and the neck in front, pale whitey-brown; tail verditer underneath.

Bill blackish, plumbeous beneath; irides brown; orbitar skin plumbeous; legs greenish-slaty.

Length 9 inches; extent 13; wing 4; tail $2\frac{1}{2}$; bill at front nearly $\frac{7}{8}$; tarsus barely

This handsome Barbet is very common at Darjeeling, that is, at a certain altitude, from 4,000 feet to 8,000, and upwards. Its usual cry is something like *kattak-kattak-kattak*. It lives entirely on fruit. It is found from Nepal, through Sikim, to Assam, Arakan, and Tenasserim, where Tickell says that it is much more abundant than at Darjeeling; Mr. Blyth, however, tells me that during his rambles in Burmah he only observed two species of Barbet, *lineatus* and *indicus*.

C. flavifrons, of Ceylon, is exactly intermediate in coloration between this group and *Megalaima*. Other species, from the Indo-Chinese region and Malayana, are *C. Malaccensis*, Hartl., *C. chrysopogon*, T., *C. versicolor*, T., and *C. mysticophanes*, T., from the

Malayan peninsula and the isles; and *C. Duvaucelei*, Lesson, (*trimaculata*, Gray, of which *C. cyanotis*, Blyth, is little more than a northern variety), from Burmah and Malayana.

Gen. XANTHOLÆMA, Bonap.

Char.—Bill, still shorter, wider, and less compressed; wing, with 2nd quill long, sub-equal to the next three.

197. Xantholæma Indica, LATH.

Bucco, apud LATHAM—JERDON, Cat. 216—B. philippensis, apud SYKES, Cat. 122—BLYTH, Cat. 327—HORSF., Cat. 934—B. flavicollis, VIEILLOT—B. luteus, LESS. (albino variety)—*Kat-khora*, H.—commonly *Tambayat* (*i. e.* Copper-smith)—*Chota bassant bairi*, or *Chota benebo*, Beng.—*Basunta lisora*, in the Upper Provinces—*Tokoji*, Tel.

THE CRIMSON-BREASTED BARBET.

Descr.—Green above, the feathers of the back and wing-coverts more or less margined with yellowish; beneath, yellowish or greenish white, streaked with green; the whitish predominating on the middle of the belly; broad frontal space, and wide pectoral gorget, glistening crimson; throat, and around the eye, pale sulphur-yellow; below the crimson gorget is a narrow crescent of golden-yellow; a band across the crown, continued round to the yellow throat, and a moustachial streak, black; a bluish tinge on the occiput and sides of the neck, where the black passes gradually into the green of the back, and also on the margins of the great alars and tail. Luteous varieties of this species occur occasionally, what Mr. Blyth calls *lutinos;* these are sometimes observed in all normally green birds, as Parrakeets, &c., analogous to ordinary *albinos.* The domestic Canary-bird is a familiar instance of the kind; the irides and retina appearing red, though in fact colourless, whence the red blood-vessels are rendered visible.

Bill black; irides dark hazel; nude orbitar skin, dull crimson; feet coral-red; claws black.

Length $6\frac{1}{2}$ inches; extent 11; wing $3\frac{1}{4}$; tail $1\frac{1}{2}$; bill at front $\frac{7}{10}$; tarsus not $\frac{8}{10}$.

The Crimson-breasted Barbet is found throughout all India, extending into the Burmese countries, Malayana, Ceylon, and the isles.

It is not found on the Himalayas, nor in the Punjab, according to Adams. It is very common wherever there is a sufficiency of trees, inhabiting open spaces in the jungles, groves of trees, avenues, and gardens, being very familiar, and approaching close to houses, and not unfrequently perching on the house-top. As far as I have observed, it does not climb like the Woodpeckers; but hops about the branches, like other perching birds. The Rev. Mr. Philipps, indeed, as quoted by Horsfield, states, that it runs up and down the tree like a Woodpecker, and other observers have asserted it climbs to its hole: but I confess that I have never seen this, and Mr. Blyth is most decidedly of opinion that the Barbets never climb. This naturalist found that one, which he kept alive, would take insects into its mouth and munch them, but swallowed none of them, and forsook them immediately when fruit was offered. Its chief food is fruit of various kinds, sometimes *perhaps* insects. It has a remarkably loud note, which sounds like *took—took—took*, and this it generally utters when seated on the top of some tree, nodding its head at each call, first to one side, then to another. Sundevall states, that it is like a rather low note on the flute, from the lower G to the second E. This sound, and the motion of its head accompanying it, have given origin to the name of 'Copper-smith,' by which it is known both among natives and Europeans. The sound often appears to come from a different direction to that from which it does really proceed; and this appears to me to depend on the direction of the bird's head when uttering the call. Mr. Philipps accounts for it, by saying that it alters the intensity of its call. Sundevall remarks that "the same individual always utters the same note, but that two are seldom heard to make it exactly alike. When, therefore, two or more birds are sitting near each other, a not unpleasant music arises from the alternation of the notes, each sounding like the tone of a series of bells." It breeds in holes in trees, laying two (or more) white eggs. A pair bred in my garden at Saugor, in the cross-beam of a vinery. The entrance was from the under side of the beam, perfectly circular. It appeared to have been used for several years; and the bird had gone on lengthening the cavity inside, year by year, till the distance from the original entrance was four or five feet; and

it had then made another entrance, also from below, about 2½ feet from the nest. I quite recently observed a nest of this bird in a hole of a decayed branch of a tree, close to a house in a large thoroughfare in Calcutta.

X. philippensis is a distinct and somewhat larger species, inhabiting the Philippine islands; and *B. Rafflesii*, Boie (apud Bonaparte), from Sumatra, is also very closely allied.

198. Xantholæma Malabarica, Blyth.

Bucco, apud Blyth, J. A. S., XVI., 386 and 465—Blyth, Cat. App. p. 336—Horsf, Cat. 937—B. barbiculus, apud Blyth, olim, and Jerdon, 2nd Suppl., Cat. 216 bis.

The Crimson-throated Barbet.

Descr.—Above darkish green, the feathers edged pale; light green beneath; forehead, around the eyes, and chin and throat, crimson; the last margined externally with golden-yellow; occiput black, passing into dull blue, which is the color of the cheeks, ear-coverts, and sides of neck.

Bill black; irides red-brown; legs red.

Length 6¼ inches; wing $3\frac{2}{10}$; tail 1½; bill at front ½; tarsus $\frac{7}{10}$.

This Barbet is only found in parts of the Malabar forests. I have met with it rarely in the Wynaad, and at one or two localities near the summit of the western ghauts in Mysore. I have had it, also, from the Travancore hills. I heard its call, which is somewhat similar to that of *X. indica*, but rather lower and deeper in its tone. *X. rubricapilla*, Gmelin, is a nearly allied species from Ceylon.

Many, and some very beautifully colored, species of Barbets are found in the Malayan peninsula and the islands; most of them belonging to Bonaparte's genus *Chotorhæa*. *Megalorhynchus Hayi* is a very remarkable plain-colored Barbet, with large bill, and the bristles at the base almost wanting. It is found in Malacca; and may be regarded as one of the various links connecting the Barbets with the Toucans.

The African Barbets appear to have much the same habits, and even call, of the Indian species. Many of them are black

and yellow (*Trachyphonus* and its allies), variously spotted and variegated; other species *Pogonias*, are black, with red heads. Not a few true Barbets are found in S. America, *Eubucco*, Bonap; so that even geographical distribution affords no sufficient reason for placing these birds in a different family group from that of the genuine Toucas. The very remarkable immediately connecting genus, *Tetragonops*, is South American.

Fam. CUCULIDÆ, Cuckoos.

Bill of moderate size, usually slender, moderately curved and compressed; nostrils exposed; gape wide; toes long, unequal; the outer toe versatile, usually turned back; tail long and broad, with ten feathers, eight only in one group.

The Cuckoos constitute a very remarkable group of birds, of moderate or small size, spread over all the globe, but most abundant in tropical regions. They vary a good deal in the form of the bill, length of wing, and strength of the feet. They mostly live on insects; a few on fruit. Some hatch their own eggs (which are usually bluish, or greenish, more or less spotted in the true Cuckoos, and white in the non-parasitic,) in nests constructed by themselves; others deposit their eggs in the nests of other birds. Some of the species, that are not parasitic, rear successive broods, a fresh egg and a full-grown young one having been found in the same nest.

In their general anatomy they resemble the *Caprimulgidæ*, but there is a single moderately large notch on each side of the sternum, which is short and broad; in some few divided into a double one; the stomach is membranous, the intestines long, they possess pedicellate cœca, and, except in one genus, have no gall-bladder. The brain of most of them is remarkably small. The body-feathers want the supplementary plume.

Most of the non-parasitic Cuckoos are provided with eye-lashes, like the Hornbills. The Cuckoos may be said to be related on one side to the Toucans, and on the other to the Woodpeckers through *Indicator*. "Notwithstanding," says Wallace, "the difference of their food, the Cuckoos approach the Toucans more closely than any other tribes of *Scansores*. Their bills are similar in form, and their plumage is also alike, more or less," &c.

This family is divided into: 1st, the *Cuculinæ* or true, or parasitic, Cuckoos; all of which deposit their eggs in the nests of other birds, and are exclusively from the Old World.

2ndly.—*Phœnicophainæ*, or Malkohas; chiefly an Eastern group, but some found in Africa, and others through the isles to Australia as (*Scythrops*). They are mostly strong-billed, rather gay-colored, birds, very often with the bill coloured green, yellow, or red; they live on insects, and make their own nests. *Scythrops* however is parasitic.

3rdly.—The *Centropodinæ*, or Coucals, feed mostly on the ground, on which they walk well and even run; being also a group confined to the Old World.

4thly.—*Coccyginæ*, or American Cuckoos. This is a group of varied structure as regards the bill, which is long in some (the *Saurotherinæ*, of Gray, or Ground Cuckoo of America, whose habits closely resemble those of our *Centropodinæ*); short and thick in others, as in *Coccyzus*, the best known of which, *C. Americanus*, has been occasionally killed in Britain.

Lastly, *Crotophaginæ*, or the Anis of S. America and the West Indies, by some erroneously classed with the Eastern *Phœnicophainæ*; being not far removed from the *Centropodine* group. These birds have rather a short, compressed, deep curved bill, short wings, long tarsi, and long graduated tail, with only eight feathers. They associate in flocks, breeding (it is alleged) in the same nest, or group of nests; and live on grasshoppers and other insects. The culmen is high, and forms an elevated ridge or keel, which divides the frontal feathers, as in some of the smaller Hornbills; and Swainson calls them the *Hornbill-Cuckoos.* Their colour is umformly black; and their eggs are dark green, but with a white external coating. Their appellation of *Crotophagus* is stated by Macleay to be a misnomer, as they do not pick the ticks from cattle; certain species of Grackle, which have this habit, having doubtless been mistaken for them.

Sub-fam. CUCULINÆ, Swains.

Bill slender, somewhat broad at the base, convex above, gently curved at the culmen; nostrils round, membranous; wings pointed;

tail rounded, nearly square, sub-furcate in one group; tibial feathers lengthened; tarsus very short, partly feathered; feet small; outer toe capable of being directed either backwards or sideways.

The true Cuckoos are exclusively inhabitants of the Eastern hemisphere, and are especially numerous in India and Malayana. They may be sub-divided into two principal groups or sections, one with the plumage generally barred beneath, and no trace of eye-lashes; the other without any barring, a series of plumelets in place of eye-lashes, and the colour generally dark.

To this sub-family almost exclusively belongs the remarkable habit, celebrated from all ages, of the female bird depositing her eggs in the nests of other birds to hatch and bring up. This habit is only found, elsewhere, in the *Molothrus*, an American genus, usually placed among the Starlings;* but the American Cuckoo, though it ordinarily incubates its own eggs, and feeds its progeny, does sometimes adopt the procedure of the old world *Cuculinæ*. The eggs of the parasitic Cuckoos appear to approximate, both in size and colour, those of the birds into whose nests they are deposited. Only one egg, in general, is placed in each nest; and some of the eggs, at all events of the rightful owner, are ejected at the same time; the newly-hatched Cuckoo is also known to hoist its nestling companions, if any, on its back and eject them from the nest, so as to ensure a more plentiful supply of food for its own increasing wants.

The cause of this peculiar habit is supposed to be, that the eggs of the Cuckoo are matured very slowly, and that she requires an interval of several days to elapse between the laying of each egg; and the young, too, require to be fed longer than the young of other birds; which circumstances combined, would make it difficult for her to incubate her own eggs, and rear the brood. It may be that from want of intelligence she is unable to construct a nest. The low development of the parts subservient to generation, the small eggs of some, and a weakening of the parental impulses, which is likely enough to accompany this, have been supposed to afford an explanation of their peculiar habits; but some of the parasitic Cuckoos, the species of *Coccystes* among others, lay ordinarily-sized eggs.

* The Australian genus *Scythrops*, among the *Phenicophainæ*, is another exception.

That their migratory habits, as suggested by Jenner, have anything whatever to do with it, is contradicted by the fact of the existence of many non-migratory Cuckoos (the common Indian Koel for instance) being equally parasitic.

Many individuals of the English Cuckoo leave the country at once, after laying their eggs; others, it is said, have been seen to remain near, and entice the young ones away as soon as flown.

The true Cuckoos do not appear to pair, many males being often seen pursuing a female; their intercourse being thus promiscuous.

Gen. Cuculus, Lin. (in part.)

Char.—Bill rather small, broadish at the base, compressed moderately beyond, gently curved, and the culmen convex; tip obsoletely notched; nostrils basal, circular, with a raised tumid margin; wings long, pointed; the 3rd quill usually longest; 2nd and 4th nearly equal; tail lengthened, rounded; tarsus very short, feathered posteriorly, with transverse scutæ in front; feet slender, short; feathers of the rump and upper tail-coverts long, thick-set and rigid.

The plumage of the Cuckoos is generally rather firm, and often Hawk-like; their orbits and gape are yellow; their food consists chiefly of caterpillars; and their voice is loud and mellow. The Cuckoos proper constitute a group of very closely allied species, which, from the resemblance of their colors and markings, are more or less difficult to distinguish. They are almost all grey above, and more less or banded beneath, the tail having white spots. I believe that none of the Indian species migrate entirely from India; but they wander about a good deal at different times, all the true Cuckoos breeding in the hills, some of them perhaps also in the plains. After the breeding is over, they appear to scatter themselves about over the whole country, one or two only restricting their range to the limits of the Himalayan forest.

The Cuckoos may be divided into two minor groups; one containing the European Cuckoo and its affines; the other, one or two species which approximate the Hawk-cuckoos.

The first have the tail graduated, the 3rd primary longest, and he 4th equal to the 2nd, or a trifle longer; the markings are always

transverse, and some adults are much barred with rufous above, and tinged with the same on the neck and breast.

199. **Cuculus canorus**, LINNÆUS.

GOULD, Birds of Europe, pl. 240—SYKES, Cat. 128—JERDON, Cat. 221—BLYTH, Cat. 341—HORSF., Cat. 1022—*Phu-phu*, in Dehra Doon—*Ku-ku-pho*, Lepch.—*Akku*, Bhot.

THE EUROPEAN CUCKOO.

Descr.—Adult—Head and upper parts ashy; throat, under side of neck, and upper part of breast, pale ashy; lower part of breast and belly white, with narrow, transverse, undulating, black lines; quills dusky, with a faint gloss of green; inner webs barred with oval white spots or incomplete bars; the two central feathers of the tail blackish, dashed with ashy, and tipped white; the others black, with white spots on one or both webs, and the tip white; under tail-coverts white with distinct arrow-shaped markings.

Bill black, yellowish at the base beneath, and at the gape; irides yellow; orbits deeper yellow; legs yellow. Length 14 inches; extent 26; wing $8\frac{3}{4}$ to 9; tail 7; bill at front not $\frac{8}{10}$; tarsus $\frac{8}{10}$; weight $4\frac{1}{2}$ oz. The wings reach from 1 to $1\frac{1}{2}$ inches from the end of the tail.

The female has very generally a tawny-brown tinge on the upper parts; and the neck and breast of both sexes are often mingled with rufous, having some dusky bars. The young bird is dusky-grey above, with white or ferruginous bars; beneath white, with the bars close on the neck and breast, distant and narrower on the abdomen; and irides blue-grey, afterwards brown. They vary considerably in this state of plumage.

The Common Cuckoo of Europe is found, though rarely, throughout all India. I procured a young specimen in N. Lat. 11° at the Tapoor Pass; and I have seen it at Hyderabad, Nagpore, Mhow (where very abundant in the rains, frequenting bushes on grassy plains), Saugor, and in Goomsoor. Major Franklin states that it is common in Bengal. Sykes procured it in the Deccan; Tickell in Chota Nagpore; and I have lately seen and heard it tolerably common at Darjeeling. Blyth has occasionally obtained it near Calcutta, and

an example in immature plumage recently at Moulmein, in October: and it has been found, though rarely, in Ceylon. Its well known call has given rise to many of its names in different languages, and it will be seen above that the Lepcha name nearly corresponds with the English. In Southern India, it is only (apparently) a very straggling and rare visitor. In Central India it remains two or three months in the spring, and may breed, as its call has been heard by me, at Goomsoor, Saugor, and Nagpore, in May and June: but I suspect that most of the birds that pass that way have completed their task for the season in the hills, and then left them to straggle over the plains of the South. I could not ascertain what bird it selected at Darjeeling to bring up its young.

Mr. Blyth kept a pair alive, and was, at one time, inclined to imagine that the note was its familiar note until it was separated from female, somewhat harsher and less musical that that of the English bird. The male never uttered its familiar note until it was separated from the female.

200. **Cucullus Himalayanus**, Vigors.

P. Z. S. 1831—Blyth, Cat. 342—Horsf., Cat. 1025—C. saturatus, Hodgson—*Tokdun*, Lepch.—*Sutendun*, Bhot.

The Himalayan Cuckoo.

Descr.—Upper parts uniform pure dark-ashy, with a faint gloss of green on the back; pale grey on the throat and breast; the rest beneath white, with rather close and moderately narrow bars of dusky-black; wings cinereous, with a brownish tinge; the inner webs with numerous and wide spots or bars; tail deep grey, with large white spots.

Length nearly 12 inches; wing 7; tail $5\frac{1}{2}$ to $5\frac{3}{4}$; bill at front $\frac{13}{16}$.

The young bird is not so strongly marked with white, as in the preceding species; throat and breast are dusky-brown, with white edges; and the abdomen has the bars wider.

This may be said to be a small likeness of *C. canorus*, which it much resembles in colors and the striation, but it has the bill proportionally stronger. I have only seen it at Darjeeling; but it is found throughout the Himalayas; extending likewise to the Tenasserim Provinces, where obtained by Mr. Blyth and others.

It has a peculiar loud call, something like that of the Hoopoe, repeated three or four times, as *hoot-hoot-hoot, hoot* with a higher note at the commencement, only heard when you are near the bird. It can be heard at a great distance off. This Cuckoo does not begin his calling so early as *C. canorus* and *C. micropterus.* I have, on several occasions, about Darjeeling, heard these three Cuckoos calling, all within the same minute, and occasionally the next species also, and likewise *Hierococcyx sparverioides.*

It is evidently this bird which Hutton alludes to, when he remarks that he shot the *C. striatus* in the act of uttering another note, which he writes *whoot-whoot-whoot;* unless, indeed, the note of that species resembles the call of the present bird, rather than of *micropterus,* which is not at all likely.

201. **Cuculus poliocephalus,** Latham.

Blyth, Cat. 343—Horsf., Cat. 1026—Jerdon, 2nd Suppl. Cat. 223, bis.—C. Himalayanus, Gould, Cent. Pl. 54—C. Bartlettii, Layard—*Dangliam,* Lepch.—*Pichu-giapu,* Bhot.

The Small Cuckoo.

Descr.—Male—Upper plumage ashy, slightly glossed with green on the back and upper tail-coverts; quills brown, also with a green gloss, and numerous close large white spots; tail deep ashy, almost black, with large white spots on the middle of each feather, on the edge of the inner webs, and at the tip: beneath, the chin and throat are pale ashy, with some rusty about the breast; the lower parts white, with rather narrow distant bars; under tail-coverts spotless.

Many adults have the upper parts fine rufous-bay, spotless on the forehead, sides of neck, and rump, but elegantly barred with dusky across the scapulars, wings and tail, and faintly on the crown, hind-neck, and interscapulars; throat, fore-neck, and breast, whitish along the middle, stained with rufous laterally, and with dark bars, more or less distinct; the rest of the lower parts broadly barred, as are also the tail-coverts. The *C. hepaticus,* auct., is the *C. canorus* in a corresponding phase of plumage; and the same is occasionally (more or less frequently) exhibited by others of the tribe.

Length 10 to $10\frac{1}{2}$ inches; wing $5\frac{7}{8}$; tail $5\frac{1}{8}$; bill at front $\frac{11}{16}$; tarsus $\frac{5}{8}$.

The Small Cuckoo is found throughout the Himalayas, migrating sparingly to the plains in the cold weather. I procured it as far South as Nellore on the East coast; and it appears to be *C. Bartlettii*, Layard, of Ceylon, where stated not to be rare. It has, however, been seldom seen except on the hills. At Darjeeling, it is tolerably common, beginning its call still later in the season even than the last one, this being rarely heard before the end of May, and continuing till the middle of July. It is a very noisy bird, and has a loud peculiar unmusical call of several syllables, which it frequently utters, both when seated on a branch and when flying from tree to tree. The Bhootias attempt to imitate this in their name for the species.

The next bird has been placed as a *Polyphasia* by Horsfield; but I think it is more allied to the preceding one, though somewhat abnormal in form and colour.

202. **Cuculus Sonneratii**, Latham.

Blyth, Cat. 349—Horsf., Cat. 1019—C. pravata, Horsf.—C. rufovittatus, Drapiez—C. Himalayanus, apud Jerdon, Cat. 223—C. venustus, Jerdon, 2nd Suppl. Cat. 223—*Basha katti pitta*, Tel.

The Banded Bay Cuckoo.

Descr.—Above greenish-dusky, numerously cross-barred with rufous (which colour, indeed, may be said to predominate), except on the coverts of the primaries; quills dusky-rufous on the edge of the outer web, pale internally; tail rufous, with a broad dusky bar near the end; the outer webs nearly dusky, and the tip white, and the inner webs with narrow bars; the whole under-parts, from the throat, white, very faintly tinged with fulvous on the flanks, and marked with numerous narrow dusky cross-bars; sides of head and neck also white, similarly barred; but the ear-coverts are coloured like the back, and the frontal feathers are white at the base, showing conspicuously just over the bill.

The young are more coarsely barred than adults, with pale rufescent on a blackish ground, and the breast is white, banded with dusky; and aged individuals have the back and wings very faintly barred, the tail with the central feathers nearly all black, the edges scolloped with rufous, and the outer feathers with dusky.

Length 10 inches; wing 5; tail 5; bill at front $\frac{7}{10}$; tarsus $\frac{6}{10}$.

This is a peculiar type, appearing to retain permanently the rufous colour, which is casual or temporary with some of the last. Its bill is rather large. It somewhat resembles the rufous state of *Polyphasia*; but may be distinguished by its larger bill, longer wings, and the narrow and close bars, both above and below, the latter being always on a white ground.

This elegantly marked little Cuckoo is found in the forests of Malabar and Travancore, where it appears tolerably common, also on the sides of the Neilgherries, and in the Wynaad, and more rarely on the Eastern Ghauts, about the latitude of Madras. It feeds chiefly on caterpillars. In what nests its eggs are deposited is unknown. It appears not to occur in Northern India or the Himalayas; but it is not rare in Ceylon, and it is likewise found in Malacca, Java, &c.

The following two Cuckoos differ somewhat from the type of the European bird, and show, in their thicker bill and coloration, a tendency to the group of *Hierococcyx*; the tail-feathers are sub-equal, the outermost alone being very much shorter than the rest; the wings, too, being distinctly shorter.

203. **Cuculus micropterus**, Gould.

Blyth, Cat. 340—Horsf., Cat. 1024—*Bou-kotako*, Beng.—*Takho-pho*, Lepch.—*Kankatong*, Bhot.

The Indian Cuckoo.

Descr.—Upper parts darkish ashy, pure on the head; throat and breast grey; abdomen white, with broad and tolerably distant dark brown bars; quills brown, the inner webs with wider bars or spots than those of *C. canorus*; tail concolorous with the body, or brownish-ashy; a broad dark band at the end, narrowly tipped

with white; in some with a few white spots, successively more developed on the outer tail-feathers.

Bill blackish, yellow at the base beneath, and at the gape; legs yellow; orbits light wax-yellow; irides pale dusky, or yellow-brown.

Length 12 to 12½; extent 23; wing 7½; tail 5¾; bill at front nearly 1 inch; tarsus ¾.

In old birds the color above is deep ashy; but in those only once moulted, the hue is a bronzed ash-brown, with the head and neck grey, and some slight traces of rufous on the sides of the neck and wings. The young are much mottled with blackish and white, especially on the head, neck, and back; the quills and tail have rufous bars and tips; but they have less rufous than the young of the common Cuckoo, and are much less barred.

The Indian Cuckoo differs conspicuously from the common one by its larger bill, shorter wings, browner upper parts, in the transverse bands of the lower surface being broader and more distant, in its dusky irides, and especially in its note. It is spread over a considerable part of India, being rare in the South, but common in the North of India. I have found it rare on the Malabar coast and in the Carnatic; it is also rare in Ceylon; but tolerably common in the jungles of Central India, as at Nagpore, Chanda, Mhow, and Saugor, and it is moderately common in Lower Bengal and more so on the Himalayas. It extends to Assam, Burmah, and the Malay countries. It is very common at Darjeeling in the spring, and repeats its call more frequently than the other Cuckoos. This is a double note of two syllables each, a fine melodious pleasing whistle, which the natives of Bengal attempt to imitate by their name *Bokutako*. Tickell remarks that it is like a double repetition of the word *Cuckoo*.

It has similar manners and habits to the common Cuckoo, uttering its call from the top of a high tree, and flying from tree to tree. It feeds chiefly on caterpillars. It has not been ascertained in what bird's nest this species deposits her eggs; but very probably on the plains it selects the genus *Malacocercus*.

204. Cuculus striatus, Drapiez.

Blyth, Cat. 340 (in part)—Horsf., Cat. 1024 (in part)—*C. affinis*, A. Hay—*Kyphul-pucka*, of hill-men at Mussoorie.

The Hill Cuckoo.

Descr.—Very similar in form and colour to the last; of which Mr. Blyth, in his Catalogue, considered it to be a large variety.

The general tint above is less pure ashy, and more embrowned; the chin and throat are sensibly paler in hue; the tail is much more conspicuously banded, the white being of greater extent, and more broadly edged with dusky, giving it more the aspect of the tail of a *Hierococcyx;* and moreover there is generally a tinge of rufous on the sides of the throat and breast, further approximating it to that group, it having much of the aspect of *H. sparverioides.*

The bands of the lower plumage are quite similar in size and distance to those of the last, but it is a larger bird however, and the foot too is proportionally stouter; the bill appears to be much of the same size.

Length 13 inches; wing $8\frac{1}{4}$; tail 6; bill at front $\frac{15}{16}$.

This species has been found in the Himalayas, and also in Malacca; and it probably extends along the higher ranges of hills between the Himalayas and the Malayan peninsula. Drapiez's specimen was from Java. Whether it has a distinct note from the last species remains to be determined; but its voice is probably very similar in character.

Gen. Hierococcyx, Müller.

Char.—Bill stouter, deeper and wider, than in *Cuculus;* wings shorter; the 4th quill longest, and the 5th about equal to the 2nd; tail nearly even, broad, with distinct dark bars.

The Cuckoos of this division have a stouter and heavier form than the last, and their mode of coloration is peculiar, resembling that of the Hawks both in the young and adult state; the throat and breast being streaked longitudinally in the young bird, and the abdomen being barred transversely. Their call approximates somewhat in character to that of *Eudynamys;* and they are partly frugivorous.

205. **Hierococcyx varius**, Vahl.

Cuculus, apud Vahl—Blyth, Cat. 339—Horsf., Cat. 1021—C. fugax, Horsf., apud Sykes, Cat. 129—Jerdon, Cat. 222—C. Lathami, Gray—Jerdon, 2nd Suppl., Cat.—C. tenuirostris, Lesson—C. ejulans, Sundevall—*Kupak* or *Upak*, H.—*Kok-gallo, Beng.* and *Popiya,* Hindi—*Kutti-pitta,* Tel.—*Zakhhat* (*i. e.* Custom-house-bird) in some parts of the Deccan—*Irolan*, Mal.

THE COMMON HAWK-CUCKOO.

Descr.—Adult—Upper parts uniform ash-grey; the winglet and coverts of the primaries darker; fore-neck and breast pale rufous, each feather light grey in the centre; belly and flanks white, barred with adjoining lines of grey and rufous, the white hardly visible exteriorly, from the overlapping, of the feathers; thighs, vent, and lower-coverts pure white, the first a little barred; throat grey, and some white at the base of the bill and sides of the throat; tail grey, tipped with faint rufous, and finally whitish, having a broad dusky subterminal band, and five other narrower and undulating zig-zag bands (one near the base) composed of a dusky bar, then a whitish one adjoining, with some traces of rufous; quills barred with white on their inner webs for the basal two-thirds of their length.

Bill dusky; lower mandible, except the tip, and also the side of the upper one at base, wax-yellow; orbits brilliant gamboge-yellow; irides dull gamboge-yellow; feet dull yellow.

Length $13\frac{1}{2}$ inches; extent 22; wing 7; tail $6\frac{3}{4}$; bill at front $\frac{8}{10}$; tarsus $\frac{3}{4}$.

The young bird has the upper plumage browner, and rufous-barred; and the lower parts are whitish, tinged with rusty, and with longitudinal brown drops. In older birds the spots are longitudinal on the neck and breast, transverse and arrow-shaped on the abdomen.

This is the common Cuckoo of the plains of India, found throughout the whole country, though most abundantly in wooded districts. It frequents gardens, groves, avenues, and jungles, and its loud crescendo notes are to be heard in the breeding season, from chiefly April to July in the South of India, but beginning

earlier in Bengal, according to Blyth in every garden or avenue. It sounds something like *Pipeeha, Pipeeha,* repeated several times, each time in a higher note than the last, till they become exceedingly loud and shrill. Mr. Elliott makes it *whi-wheeha.* Sundevall calls it *Piripin.* This author further remarks that each word is pronounced about twice nearly in this manner, in the musical scale C. B. B. A.—A. C. C. B.—B. D. D. C.,—and it thus mounts the scale of notes at every second cry, three or four times, till the note is as high as the bird can raise it, when it makes a short pause and begins anew.

I believe that this Cuckoo usually deposits its eggs in the nests of the *Malacocerci.* I have, on several occasions, seen the old birds of *M. Malabaricus,* and *M. griseus,* feeding a young Cuckoo, which was following them about screaming. On one occasion, at least, there were two or three young *Malacocerci* in company, so that the young of this species of Cuckoo does not always eject the eggs or young of its foster-parents from the nest.

It lives both on caterpillars and other soft insects, and on fruits; and it is very fond of the fig of the banian and other *Fici.* The flight is rapid, darting into a tree or bush with a peculiar rush. Small birds very often mistake it for the *Shikra* (*Micronisus badius*), and pursue it under that impression. Some natives assert that it lays its eggs in the nest of the *Shikra,* which of course is not likely. It is stated to be very excellent eating, being very fat: and it occurs in Ceylon, Burmah, and Malayana.

206. Hierococcyx nisicolor, Hodgson.

Hodgson's Hawk-cuckoo.

Descr.—Very similar to the last, but considerably smaller. The upper plumage is darker, but, at the same time, purer cinereous than in that species, and the difference is conspicuous on every part where that tint occurs, as well on the chin, cheeks, sides of the throat, upper plumage, and tail; beneath, in the only specimen examined, a pale rufous, a shade darker than in the corresponding stage of *C. varius,* and with some darkish markings on the

centre of each feather; these are most conspicuous on the flanks, and the tibial feathers have the usual transverse bars; under tail-coverts pure white; the tail differs conspicuously in its dark bars, which are much more pronounced, and want the pale or whitish edging, being also less sinuated; and the terminal band is distinctly and considerably broader, being tipped with pale rufous, and the penultimate bar is also broader and more conspicuous.

Length rather less than 12 inches; wing $6\frac{3}{4}$; tail about $5\frac{1}{4}$; the feet are proportionately more feeble in the present being.

Mr. Blyth, in his valuable paper on the *Cuculidæ*, in treating of *Cuc. varius*, describes this bird from the same specimen in the Mus. As. Soc., Calcutta, and states that if he had seen other examples he would have ranged it as a separate species. He is now convinced of its distinctness; and, on comparing the two birds together, along with that naturalist, I fully acquiesced in his decision. Horsfield, however, in his Catalogue joins it to *C. varius.* Nothing is recorded of its habits. The only known specimens have been sent from Nepal. I have no doubt that its call is quite similar in character to that of the common Hawk-cuckoo.

A fourth species of the present group exists in the Mus. As. Soc., Calcutta, from China, very similar to *H. sparverioides* but smaller.

207. **Hierococcyx sparverioides**, Vigors.

Cuculus, apud Vigors, P. Z. S. 1831—Gould, Cent. Him. Birds, pl. 53—Horsf., Cat. 1020—Blyth; Cat. 338—Jerdon, J. A. S., XII., 240—*Nimbin-pyeul*, Lepch.—*Mipiu*, Bhot.

The Large Hawk-cuckoo.

Descr.—Crown, occiput, and sides of the upper part of neck, brown, tinged on the sides and front of the lower part of neck, with very dark ashy; the rest of the upper parts bronzed dark bright ferruginous, with an ashy tinge; chin ashy; throat white, streaked with the same, mingled with rufous; lores also whitish; under parts from the breast, fulvescent-white, transversely streaked with dusky; vent, and under tail-coverts pure white, with some dark

bands on the longest of the latter; tail paler brown than the back, crossed with five dark bars; the subterminal one very broad, and the extreme tip whitish; the penultimate dark bar narrow; primaries and secondaries obscurely banded on their outer webs with narrow bars of dull pale fulvous, and on their inner webs with white internally.

Bill dusky-brown above, yellowish at the base beneath; irides pale yellow; feet buffy-yellow.

Length 15 inches; wing $8\frac{1}{2}$; tail 8; bill at front, $\frac{7}{8}$. A young bird is banded with rufous above; beneath fulvous white, with numerous large blackish mesial streaks.

This very fine Hawk-cuckoo is found throughout the Himalayas, and during the cold weather, at all events, on the Neilgherries. It has also been found in Malacca. On the Neilgherries I rarely saw it, except when the jungle was beaten for Woodcocks, when one of these Cuckoos would occasionally be flushed, and fly off with great rapidity and elegance to a neighbouring wood. I should imagine that it is a permanent resident there, as the birds of the present group are less migratory than those of restricted *Cuculus*. At Darjeeling it is chiefly seen, or rather heard, from April to June, and may be heard daily calling all round the Station. Its call is very similar to that of its near congener, *H. varius*, so much so that, on hearing it first at Darjeeling, I concluded that that species was also found on the hills. On shooting one in the act of calling, I was surprized to find it to be my old Neilgherry acquaintance. I found that caterpillars had formed its entire food.

Gen. Polyphasia, Blyth.

Syn. *Cacomantis*, Müller (in part).

Of small size. Plumage variable, grey or dusky above; lower plumage not barred in the normal adult state; the tarsi less plumed externally than in *Cuculus*.

This group consist of several small species, found in India and Malayana, extending to Australia; and perhaps *C. rubeculus*, Sw., and *Cuc. nigricans*, Sw., placed by some in *Surniculus*, belong rather to the present genus.

208. **Polyphasia Nigra,** apud Blyth.

Cuculus, apud BLYTH, Cat. 347, in part—HORSF., Cat. 1018 in part—C. niger, vel pyrommatus, HODGSON—C. flavus, apud JERDON, Cat. 224—*Pousya*, Mahr.—*Chinna katti pitta*, Tel.

THE INDIAN PLAINTIVE CUCKOO.

Descr.—Adult, uniform dark ashy above, with more or less of a green gloss; beneath, pale ashy; vent and under tail-coverts pure white; quills dusky, with a broad white band on the inner web of each feather; tail blackish; the inner webs banded with white (except the middle pair), and all tipped white.

Bill blackish, red at base beneath and at the gape and within: feet reddish-yellow; irides fine ruby-red, in some brownish-red.

Length 9 inches; wing $4\frac{1}{2}$; tail $4\frac{1}{2}$; bill at front $\frac{6}{10}$; tarsus $\frac{6}{10}$; extent 14.

A common phase of this species in South India is dusky cinereous, almost blackish, above, with a greenish gloss; beneath the same, but less glossed; tail as in the last, but darker and with fewer white spots. The younger state of this phase is glossy dark cinereous only on the back and wings, the head and rump being ashy, chin and throat cinereous, breast darker cinereous, banded with rufous and white; belly pale cinereous, faintly marked with pale rufous and white; under tail-coverts white; tail as in the last.

In some states of plumage, probably analogous to the *hepaticus* phase of *canorus,* all the upper parts are bright rufous, with dusky bars; the primaries dusky-brown with rufous edges; the tail rufous, all the outer feathers having dark bars and a broader subterminal one, with a white spot at the tip; throat, neck, and breast pale rufous, with dusky bars; and the belly, flanks, and tail-coverts, white, also with dusky cross-bars; tibial feathers rufous-barred.

In a more advanced state of the same plumage, the bars on the head and rump disappear, and those that remain have a green gloss upon them. Under what circumstances this state of plumage takes place is not known, and it would form an interesting inquiry for those favorably situated for prosecuting it. The rufous phase appears to

be more commonly assumed in this species, than the supposed similar state of *canorus* and others.

As I consider that the race spread throughout most of India differs from the ordinarily rufous-bellied one found commonly in Bengal, and exclusively in the Burmese countries, I have retained the name of *nigra* for it, and transferred the name of *tenuirostris* to the other race.

The Plaintive Cuckoo is found over all India, in woody countries. It is most abundant on the Malabar coast, in the Wynaad, and on the warmer slopes on the top of the Neilgherries; rare in the Carnatic, but found here and there in jungly places, and on the Eastern Ghauts; also in Central India; rare in Lower Bengal, and up to the foot of the N. W. Himalayas. It is said to be common in Ceylon, appearing in February.

It frequents forests, groves, gardens and low bush-jungle, wandering about much, and hunting for caterpillars and other soft insects. It has a plaintive call of two syllables, the last one lengthened out, which Mr. Elliott made *whi, whew,—whi whew whew*,—and which may be written as *ka-veer ka-vee-eer*, and to which the bird, by pointing his head in different directions, as he sits calling, gives a most ventriloquistic effect; sometimes appearing as if coming from one side, and immediately afterwards from the opposite. It has also, at times, another call, very like that of *Hier-varius* in style; but delivered rapidly, and of course more feebly. At Hyderabad I saw a bird of this species in grey plumage seated on the trellis work of some creepers, in a garden at the Residency, flapping its wings, and flitting a step or two every now and then. This attracted my notice, and on searching I found the nest of a *Prinia socialis* with eggs, close to the spot where the Cuckoo had been seated. I have no doubt that she was meditating to deposit an egg there. Mr. Blyth relates that he was informed by a native that he saw this bird endeavour to capture a butterfly with its feet. Gould states that the egg of the allied *C. cineraceus* is fleshy-white, with spots of purplish-brown.

The rufous-bellied specimens have never, to my knowledge, been obtained in any of the localities mentioned here, except in lower Bengal, nor in Ceylon.

209. Polyphasia tenuirostris, Gray.

Cuculus, apud Gray, Hardwicke, Ill. Ind. Zool., 2, pl. 34, f. 1 —Blyth, Cat. 347 (in part)—Horsf., Cat. 1018 (in part)—*Chota bhrou*, Beng.

THE RUFOUS-BELLIED CUCKOO.

Descr.—Adult, ashy above, more or less tinged with green; wings and tail as in the last; chin, throat, and upper breast, pale ashy, nearly concolorous with the head; beneath, from the breast, bright rusty rufous, darkest on the tail-coverts. Some specimens, from the neighbourhood of Calcutta, are without the rufous abdomen, which is pure ashy, with the under tail-coverts white; but whether these are a different state of the same race, or the Southern one, it is impossible to decide. Some few specimens, moreover, have the rufous colour extending as far as the chin. To the east of the Bay of Bengal, grey-bellied specimens have never been met with.

The young bird is dusky, with a green gloss and with rufous bars; the tail black, with numerous rusty bars on both webs, white tipped, and with white bars on the inner webs of the outer tail feathers; beneath, pale rusty with dusky bars, chiefly on the throat and breast, obsolete on the belly. In the rufous phase that colour is more distinct and marked than in similarly coloured specimens of the last; the abdomen is broadly banded; the tail very rufous, with few markings and without the white tip or the white bars internally. Dimensions nearly of the last.

This species or race is found in Lower Bengal, and in all the countries to the East, as Assam, Sylhet, Burmah, and even so far as China. It appears that, in Bengal, where it meets the Indian race, the two interbreed with each other, as in the case of the two Rollers. Blyth says, that in Bengal you meet with every variation and shade of intermediateness. I have lately had an opportunity of observing this race in Upper Burmah, and found that its note is certainly different from that of the Indian bird, being not so plaintive, and indeed somewhat different in character. Swinhoe, in his Ornithology of Amoy, states that its call is a loud-toned whistle, repeated four times and terminating with a shake. I have never met with this race to the South; but the few specimens which I obtained of it at

Calcutta, and those that I saw in Upper Burmah, were quite typical, as regards the particular coloration.

A very closely allied species, *P. merulina*, still smaller than the Indian bird, is found throughout Malayana; and *C. cineraceus* and *C. insperatus* of Australia belong to the same division; the latter wanting the white markings, thus allying it to *Chrysococcyx*.

Gen. Surniculus, Lesson.

Syn. *Pseudornis*, Hodgson.

Char.—Tail even or forked, with the two outermost feathers short, the penultimate being slightly the longest, and each lateral half of the tail curling outwards towards the tip as in the Drongos; otherwise as in the last. Plumage black. This genus was constituted for the Malayan *C. lugubris* of Horsfield.

210. **Surniculus dicruroides**, Hodgson.

Pseudornis, apud Hodgson, J. A. S., VIII., 136, with figure—Blyth, Cat. 350—Horsf., Cat. 1016—Jerdon, Cat. 225—*Kurrio-viyum*, Lepch.

The Drongo or Fork-tailed Cuckoo.

Descr.—Black, with a changeable blue and green gloss, brightest above; the head subcrested, and generally two or three white feathers in the centre of the occiput; tibial and tarsal feathers partially white; some white specks on the wing-coverts, and on the upper tail-coverts occasionally; lower tail-coverts marked with white; outermost primary with a round white spot, and all the others with an oblique white mark, causing an oblique streak of white on the inner surface of the wings; outermost tail-feathers obliquely barred or spotted with white.

Bill black; palate red; legs and feet dusky-reddish; irides red-brown.

Length 10 inches; wing 5½; tail 5¾; outermost tail-feathers 1¼ inch less than the penultimate, which is the longest; middle pair ½ inch shorter.

The young birds are spotted with white on the head, wing-coverts, and lower surface; and the tail has also more white spots.

This remarkable Cuckoo, clad so completely in the guise of the Common King-crow (*Dicrurus macrocercus*), is found, though sparingly, throughout India. I have procured it on the Malabar coast, the Wynaad, in Central India, and at Darjeeling. It has been found in other parts of the Himalayas, also in Ceylon, where it is said not to be rare, and in Tenasserim and Burmah. Does this Cuckoo select the nest of the Drongo in which to deposit her eggs? If so, the foster-parents would hardly be undeceived even when the bird had arrived at maturity. One day, in Upper Burmah, I saw a King-crow pursuing what at first I believed to be another of his own species; but a peculiar call that the pursued bird was uttering, and some white in its plumage, which I observed as it passed close to me, led me to suppose that it was a Drongo-cuckoo, which had perhaps been detected (this being the breeding season) about the nest of the *Dicrurus*. Mr. Blyth relates that he obtained a pure white egg in the same nest with four eggs of *D. macrocercus*, and which, he remarks, may have been that of the Drongo-cuckoo.

I am ignorant of the note of this Cuckoo, but it is probably similar in character to that of *Polyphasia;* for Horsfield named the Malayan race from its plaintive call. I once or twice, in the valley of the Rungnoo, near Darjeeling, heard what I considered to be the call of *P. nigra;* but I never procured that bird in Sikhim, and the call may have been that of *S. dicruroides*.

A second species of this genus exists in the *C. lugubris* of Horsfield; which, indeed, approaches our bird very closely, and is doubtfully distinct, according to Strickland; but it appears to be always a smaller race, and with the tail less distinctly forked than in our Indian bird.

Gen. CHRYOSCOCCYX, Boie.

Syn. *Chalcites*, Lesson.

Char.—Bill as in *Cuculus*, but a little more depressed at the base, and quite entire at tip; wings pointed; 2nd quill longer than the 4th; 3rd nearly as long; the feathers of the rump and upper tail-coverts, soft; and tarsi very short and much plumed.

This is a charming group of very diminutive Cuckoos, clad in resplendent golden-green or purple metallic colours. They are natives of Africa, India, and Malayana, extending to Australia.

211. Chrysococcyx Hodgsoni, MOORE.

HORSF., Cat. 1029—C. chalcites, apud BLYTH, Cat. 355—C. smaragdinus, BLYTH—Cuc. Malayanus, GRAY, Gen. Birds, 2, pl. 117—Trogon maculatus, GMEL., after BROWN, Ill. Ind. Zool., pl. 13,—*Angpha*, Lepch.—C. lucidus, apud JERDON 2nd Suppl., Cat. 225 bis.

THE EMERALD CUCKOO.

Descr.— Above brilliant emerald-green with a rich golden gloss; beneath white, with cross-bars of shining green; tail, with the outer feathers barred with white externally.

Bill yellow, tipped dusky; irides red-brown; feet reddish-cinereous.

Length $6\frac{1}{2}$ to 7 inches; wing $4\frac{1}{4}$; tail 3; bill at front $\frac{5}{8}$; tarsus $\frac{1}{2}$.

Some specimens, smaller and more bronzed, are supposed to be females.

The young bird is dingy shining greenish, sometimes barred with rufous, above, especially on the tail; beneath whitish, with dusky greenish bars throughout. One, in the rufous phase, has the upper parts rufous, barred with rather dull green; under parts white, banded throughout with dusky-greenish; bill blackish-yellow at the base. Another, has the head and nape chesnut, the back coppery, the tail with rufous bands, and the under-parts barred.

This very lovely Cuckoo is rare in India, but more common in the Burmese provinces. It has been procured rarely in Central India. It is also found in the Himalayas and in Ceylon. I procured it only once near Darjeeling at about 4,000 feet of elevation. Nothing is recorded of its habits; but the one which I shot had eaten insects. The Australian *C. lucidus* (which it much resembles, but has the lower bands closer,) is said to deposit its single egg in the nest of the *Malurus* and *Acanthiza;* and it is remarkable that the egg is generally deposited in a domed nest with a very small hole for entrance. In New Zealand, however, it is said to select the

nest of the Fan-tailed Flycatcher (*Rhipidura*). The egg is clear olive-brown, somewhat paler at the smaller end.

Three more species are recorded from Malayana; one of which (found also in S. Burmah) is of a beautiful amethystine colour above, *C. xanthorhynchos*, Horsf. The other two are *C. Malayanus* and *C. basalis*.

The next birds belong to a peculiar section, with the plumage mostly black or very dark, and it consists of two distinct genera, one with the bill of *Cuculus*, but the head crested; the other with a much stronger and deeper bill, and with the sexes permanently differing in colour.

Gen. Coccystes, Goger.

Syn. *Oxylophus*, Swains.: *Edolius*, Less.

Char.—Head crested; bill slender and *Cuculine*, but more compressed, slightly curving at first, suddenly bent down at the tip, which is entire; nostrils basal, lengthened and ovate, close to edge of mandible; wings moderate, slightly rounded; 3rd and 4th quills sub-equal, or 4th quill longest; tail long, graduated; tarsus longer than in *Cuculus*, not feathered; feathers of the rump soft.

The Cuckoos of this genus are found in Africa and India. They are somewhat allied to the American Cuckoos by having a series of small rudimentary plumelets as eyelashes, and by their wholly unbarred plumage. They have an erectile pointed crest, and lay greenish-blue eggs, of larger relative dimensions than those of *Cuculus*. The Indian species are parasitic and exclusively insectivorous. One extends to the south of Europe, *C. glandarius*, and has been killed in Ireland; and it is said, but I have no doubt erroneously, to build its own nest. This has a longer wing than the Indian birds, and belongs to a different section, having a much more *Cuculine* aspect.

212. Coccystes melanoleucos, Gmel.

Cuculus, apud Gmelin—Blyth, Cat. 362—Horsf., Cat. 1014—Leptosomus apud Franklin—and Sykes, Cat. 126—Oxylophus edolius, Swainson; and Jerdon, Cat. 226—O. ater, and serratoides, Hodgson—O. serratus, apud Gray—*Popiya*, Hind, also

Chatak—Kola Bulbul, Beng.—*Gola kokila,* Tel., *i. e.* 'Milkman Cuckoo;' also *Tangada gorankah.*

THE PIED CRESTED CUCKOO.

Descr.—Above, uniform black, with a greenish shine; bases of the primaries white, forming a conspicuous wing-spot; all the tail-feathers tipped white, broadly, except the central pair which are very narrowly tipped; under parts dull white; in some, especially the females, slightly tinged with fulvescent.

A young bird in the Mus. As. Soc., Calcutta, has some of the feathers edged whitish, but the nestling plumage is simply dull black above, fulvous beneath, and very much resembling in this state the adult plumage of some of the American Cuckoos; bill in the young bird, yellow.

The 3rd and 4th primaries are equal, and the 2nd is much shorter than the fifth, about equal to the 6th.

Bill black; legs leaden-blue; irides red-brown. Length 13 inches; extent $17\frac{1}{2}$; wing $5\frac{3}{4}$; tail 7; bill at front $\frac{3}{4}$ to $\frac{8}{10}$; tarsus $\frac{15}{16}$; weight $2\frac{1}{2}$ oz.

This Pied Cuckoo is found over all India, being rare on the Malabar coast, common in the Carnatic, and not uncommon throughout Central India to Bengal, where it is only at all common in the rains. It is more abundant in Upper Pegu than anywhere else that I have observed it. I mention this, because Mr. Blyth was informed that it was rare on the Eastern side of the Bay of Bengal. I have seen it on the Neilgherries up to 5,000 feet. It frequents jungles, groves, gardens, hedges and avenues, generally alone, sometimes in pairs or small parties. At the breeding season it is very noisy, two or three males (apparently) often following a female, uttering their loud peculiar call, which is a high pitched wild metallic note. It utters this very constantly during its flight, which is not rapid, from one tree to another, and occasionally at a considerable height. As Mr. Blyth has remarked, it does not at all affect concealment, perching often on a bare branch, or on the top of a bush, and not unfrequently alighting on the ground. It feeds on insects, chiefly mantides, grasshoppers, caterpillars, &c. The female lays her egg usually in the nest of the *Malaco-*

cerci. I found a young one in the nest of *M. griseus*, in a thick Euphorbia hedge at Coimbatore; and Layard, in Ceylon, found a pair of the *Malacocerci* of Ceylon, feeding a young one. Theobald also obtained the egg from the nest of *M. caudatus*; and Blyth from that of *M. bengalensis*: it is deep greenish-blue, and bluntly oval at both ends. Latham mentions that it is said to lay its egg in the nest of the *Chatarrhæa*, *Malacocercus bengalensis*.

This bird, remarks Mr. Phillips, makes a great figure in Hindu poetry, under the name of *Chatak*.

213. Coccystes Coromandus, LIN.

Cuculus, apud LINNÆUS—BLYTH., Cat. 363—HORSF., Cat. 1013—JERDON, Cat. 227—Cuc. collaris, VIEILLOT—*Yerra gola kokila.* Tel.,—*Tseben*, Lepch.

THE RED-WINGED CRESTED CUCKOO.

Descr.—Upper parts, with the tertiaries, black, glossed with green, paler on the tertiaries, and less glossed on the head; a conspicuous half-collar of white encircles the nape; wings deep ferruginous, with the tips of the primaries and secondaries dusky; under parts white, a little tinged with fulvous, except the lower tail-coverts, which are green-black, and the throat and fore-neck, which are deep ochreous, fulvous in some; in others, probably females, light fulvous.

Bill black; legs leaden; irides red-brown; inside of the mouth dull coral-red. Length $14\frac{1}{2}$ inches; extent $18\frac{1}{2}$; wing $6\frac{1}{2}$; tail $8\frac{1}{2}$; bill at front 1 in; tarsus $\frac{8}{10}$.

The wings are shorter and more rounded than in the last; 4th and 5th primaries equal and longest; 3rd equal to 6th, or very little shorter.

A young bird in the Mus. As. Soc. has the feathers of the head and some of those of the wing-coverts edged with rufous.

The coloring of this bird, it may be mentioned, has some points in common with *Centropus*.

It appears to be a rare species everywhere, though generally spread through India and Ceylon, extending into Burmah and Malayana. It is said to be common in Tenasserim and the

Malayan peninsula. I have seen it in Malabar and the Carnatic, and it is also found in Central India, and not very uncommonly in Bengal; in the latter country only during the rains. I obtained it in Sikhim in the warmer valleys. I do not know its call, nor if it has any peculiarity of habit.

Besides the *C. glandarius*, already alluded to, there are two other species, both of them African, and one of them was long confounded with our Indian bird, *C. serratus*; the other, *C. afer*.

The next forms a group by itself, distinguished among other points by its thick green bill, by the sexes differing in colour, and by their frugivorous diet.

Gen. EUDYNAMYS, Vigors and Horsf.

Char.—Bill strong, thick, vertically deep, much curved at tip, and hooked; the lower mandible nearly straight; gonys slightly undulated upwards; nostrils long, oval; wings, with the 4th quill longest; tail lengthened, rounded; rump and upper tail-feathers soft; tarsus strong, not feathered below the joint, flattened in front.

This genus includes several nearly allied species from India, Malayana, and Australia, and is indeed mostly oceanic. The male, which is generally the smaller bird, is black, and the female more or less spotted with white. They are the most frugivorous of all the *Cuculinæ*.

214. Eudynamys orientalis, LIN.

Cuculus, apud LINN.—Pl. Enl. 273, f.1—JERDON, Cat. 228—Blyth, Cat. 358—HORSF., Cat. 1034—SYKES, Cat. 127—C. niger, Mindanensis, and scolopaceus L.—C. maculatus, GMELIN (the female)—*Koel* H., the female sometimes called *koreyala*, *i. e.* the 'spotted' *Kokil*, Beng.—*Kokila*, Tel., the male being called *Nallak.*, and the female *Podak.*

THE INDIAN KOEL.

Descr.—Male, glossy greenish black throughout.

Bill pale greenish; inside of the mouth reddish; irides fine crimson; legs slaty blue. Length 15½ inches; extent 23; wing 7½; tail 7½; bill at front 1; tarsus 1⅛.

The female is glossy dusky-green, spotted with white above, and the wings and tail banded with white; beneath white, with black spots, longitudinal on the throat and neck, somewhat heart-shaped or arrow-shaped on the breast, and transverse on the abdomen, thigh-coverts, and under tail-coverts.

Length 17½ inches; wing nearly 8; tail 8.

The young female has the white spots and marks much tinged with rufous; and the young male has a good deal of white on his plumage.

This well-known species is found throughout India, extending to Ceylon, the Burmese countries, and parts of Malayana to the Philippines. It frequents gardens, groves, avenues, and open jungles; and feeds almost exclusively, I believe, on fruit of various kinds, especially on those of the banian, peepul, and other figs; also, says Mr. Blyth, much on that of *Mimusops elengi*. Several may often be seen together on one tree; but it is not gregarious. Mr. Blyth states that it ejects by the mouth the large seeds of any fruit that it has eaten.

The Koel is by no means a shy bird; but has the usual quiet unobtrusive habits of the ordinary Cuckoos, gliding about the branches of trees: when it takes wing, however, it is remarkable for its noisy cries.

About the breeding season the Koel is very noisy, and may be then heard at all times, even during the night, frequently uttering its well-known cry of *ku-il ku-il*, increasing in vigour and intensity as it goes on. The male bird has also another note, which Blyth syllables as *Ho-whee-ho*, or *Ho-a-o*, or *Ho-y-o*. When it takes flight, it has yet another somewhat melodious and rich liquid call; all thoroughly Cuculine.

The female Koel, as has long been known in India, deposits her eggs almost exclusively in the nest of the Common Crow (*Corvus splendens*), more rarely in that of the Carrion Crow (*C. culminatus*). She only, in general, lays one egg in each Crow's nest, and mostly, but not always, destroys the eggs of the Crow at the time of depositing her own. It is a popular belief that the Crow discovers the imposture when the young Koel is nearly full-grown, and

ejects it from the nest; but this I do not think is usually, or ever the case, for I have frequently seen Crows feeding the young Koel after it had left the nest. Some observers have declared that the old female Koel often watches the nest in which she has deposited her eggs, and when the birds are full grown, entices them away, or, if expelled, looks after them, and feeds them for a few days; but I greatly doubt if this be the general practice. The egg of the Koel is pale olive-green, with numerous reddish-dusky spots, having a tendency to form a zone near the large end.

The Crows appear to know full well that they are cuckolded by the Koel; for at times you see them pursuing these Cuckoos with the utmost energy, and Mr. Frith, as quoted by Blyth, states that one dashed itself against a window and was killed, when pursued by a Crow. The flight of the Koel is not so quiet and gliding as that of the true Cuckoos, but is performed with more numerous strokes of the wings.

Bonaparte makes a second Indian species from the *Cuc. niger*, L., synonymous with *C. honoratus*, L., taken from Pl. Enl. 294. This plate is probably intended for a young Koel, for I am confident that there is no second species of *Eudynamys* in India. *E. Flindersii*, the New Zealand species, has a very Cuculine aspect, resembling in its colours *H. sparverioides*. *Simotes*, founded by Blyth on a Cuckoo from Waigiou, *Cuc. leucolophus*, Müll., has the plumage black, and the conspicuous white occipital feathers, a trace of which is seen in *Surniculus*. This is erroneously placed by Bonaparte as synonymous with *Hierococcyx;* but is quite a distinct genus, belonging to this subfamily; and the name has been *subsequently* bestowed on a genus of Snakes.

Sub-fam. PHÆNICOPHAINÆ, Gray and Horsf.

Descr.—Bill moderate or longish; ridge curved; nostrils linear; orbital region generally naked; wings short; tail long, graduated.

This sub-family is peculiar to India and Malayana, where it is much developed; one species, however, occurring in Africa. Some of them are pleasingly adorned with somewhat gay plumage. Their clothing-feathers are often decomposed and hair-like; their

bills are brightly coloured, and the bare skin round the edge is considerably developed, and generally highly coloured, blue, or green, or crimson. They live mainly on insects.

Some systematists include in this family the *Crotophagæ* of S. America, and the *Scythrops* of Australia; but the former are more nearly related to the birds of the next sub-family, and perhaps form a sub-family of their own; and *Scthryops* appears to be a link between the *Cuculinæ* and *Phænicophainæ*, being allied to the one by colour and parasitic habits, and to the other by the structure of its bill, wings and legs.

Gen. ZANCLOSTOMUS, Swainson.

Char.—Bill much compressed throughout, curved both at the culmen and lower mandible; nostrils basal, oval, pierced in a slight depression in the horny substance; wing short, rounded, with the 4th, 5th and 6th quills nearly equal and longest; tail much lengthened, graduated; tarsus moderate or longish; hallux very short; claws well curved, sharp.

Species of this genus occur rarely in Africa and are common in India.

215. **Zanclostomus tristis**, LESS.

Melias, apud LESSON, BELANGER, Voyage, pl.—BLYTH, Cat. 374—HORSF., Cat. 1011—JERDON, 2nd Suppl. Cat. 229 bis—Phænicophaus longicaudatus, BLYTH—P. montanus, HODGS.—*Sankumong*, Lepch—*Ban-kokil*, Beng.

THE LARGE GREEN-BILLED MALKOHA.

Descr.—General plumage dark greenish-grey; the head and upper part of the neck more cinereous; wings and tail dark shining green; the tail with a white tip to each feather; front of neck and breast paler grey, passing into whitish on the throat and immediately around the naked space surrounding the eye; these whitish feathers having dark shafts, which terminate in a slightly prolonged hair-like bristle; the small anterior portion of the lores black.

Bill bright apple-green; bare papillose skin round the eyes dull crimson; irides dark brown; legs greenish-slaty.

Length 23 inches; wing $6\frac{3}{4}$; tail $16\frac{3}{4}$; bill at front $1\frac{1}{4}$; tarsus nearly $1\frac{1}{2}$.

The nostrils are pierced at the end of a red membrane, which is continuous with the orbitar skin; the bill is comparatively small.

This handsome bird is found in Lower Bengal, Central India, and the Northern Circars, also in the warmer valleys of the Himalayas. It extends to Assam, Burmah and Malacca, where very abundant.

I have usually seen it solitary, wandering about in the forests, and eating large insects, mantides, crickets, grasshoppers, and also large caterpillars. In Sikim it is only found in the warmer valleys up to 3,000 feet or so. The eggs were brought to me at Darjeeling, two in number, pure white, and of a long oval form. I did not see the nest, which was said to be a large mass of sticks and roots. I took another and similar egg from the oviduct of a female which I shot. Mr. Blyth remarks that its presence is often betrayed by its voice, which is a low monosyllabic *chuck*, often repeated, and delivered commonly when perched on the bough of a tree.

216. **Zanclostomus viridirostris**, Jerdon.

Jerdon, Cat. 229—Ill. Ind. Orn.. Pl. 3—Blyth, Cat. 375—Horsf., Cat. 1010—Phænicophaus Jerdoni, Blyth—*Kapprapopya, H.*—*Wamana kaki,* Tel. *i. e.* Dwarf Crow.

The Small Green-billed Malkoha.

Descr.—Above, dusky cinereous, with a tinge of glossy green; wings and tail glossy green-black, the latter tipped with white; beneath light greyish, with a tinge of fawn colour, mixed with blackish, on the chin and throat.

Bill bright apple-green; naked skin around eyes cobalt blue; irides blood-red; legs blackish-green.

Length 15 inches; wing $5\frac{1}{4}$; tail 10; bill at front 1; tarsus $1\frac{5}{10}$; weight $2\frac{1}{2}$ oz.

This species is a dwarf representative of the last, differing slightly in color, in the ferruginous tinge of the lower parts, the

want of whitish about the throat and eyes, and the blue colour throughout of the naked skin surrounded the eyes. It is found in the south of India and Ceylon, extending as far as Cuttack, where it meets the last species. It frequents thick bamboo and bushy jungles, also groves and avenues, and especially the fine large hedges of Euphorbia found in the Coimbatore district. It feeds on various large insects, grasshoppers, mantides, and caterpillars, and makes its way with great adroitness through the thickets. Its flight is feeble, and it unwillingly takes wing, and that for no distance. In Ceylon, where it is said to be common, and to live in pairs, I have always seen it single; and never found it feeding on fruit, as Mr. Layard did in Ceylon.

Mr. Blyth has pointed out a peculiar structure of the feathers of the throat and fore-neck, which are furcate, from the terminal webs being longer than the shaft.

One species, *Z. javanicus*, is found in Burmah and Malayana; and *Z. sumatranus* and *Z. diardi* in Malacca and the islands.

The genus *Phænicophaus* is very close to *Zanclostomus*, but has usually more nude skin round the eye, and the bill wider and deeper. One species is found in Ceylon, *P. pyrrhocephalus;* and another in Burmah and Malayana, *P. curvirostris.* The former is said to have white irides, to frequent the highest branches in dense jungles, and is considered a great delicacy by the natives. *Rhinortha* is a very peculiar form from Malayana, with the bill rather large, not curved, but with the tip abruptly bent; it wants eye-lashes; there is very little nude skin surrounding the eyes; and the sexes differ remarkably in plumage.

Most of the *Phænicophai* are from the islands of Malayana, the Philippines, &c. A very remarkable genus, *Scythrops* or Rain-bird, or Channel-bill, is found in Australia, migrating to Celebes. It has a very large strong bill, with two grooves on each side of the upper mandible; a naked space round the eyes; the tail is long, and has a resemblance to the Toucans, among which, indeed, Swainson places it; but it wants the ciliated tongue of that group, and its whole anatomy, coloration, the

structure of its feathers, and its parasitic mode of propagation, bring it a great deal closer to the Cuckoos.

Sub-fam. CENTROPODINÆ—Coucals.

Bill strong, deep, compressed; wings rather short, rounded; tail long, graduated; tarsus long; feet for walking; hallux lengthened in some, and with the nail straight; in others short and more curved.

This sub-family comprises two distinct forms, the typical one, with the hind toe and claw lengthened, and Lark-like. They are found in the warmer regions of the Old World, extending to the temperate region in Australia, being much developed in the oceanic region. They build their own nests, lay white eggs, and feed chiefly on the ground on reptiles and insects. Mr. Blyth does not separate them from the *Phœnicophainæ*, but their ground-habits and other points of structure appear to me to require a distinct sub-family rank. The plumage in general is rigid and spinous.

Gen. CENTROPUS, Illiger.

Char.—Bill strong, of moderate length, well curved, high at the base, entire at the tip; nostrils lateral, basal, half covered with a scale; wings rounded; tail elongate, graduate, very broad; tarsus long; feet larger; hallux long; claw of the hallux generally lengthened, somewhat straight.

The Coucals have the plumage harsh and spinous; the young are usually more or less barred; in some these cross-bands are permanent. Gould states that the males of one species are smaller than the females. They are found in Africa and throughout the Indian region to Australia; and appear to be peculiarly developed in the oceanic regions.

217. **Centropus rufipennis**, ILLIGER.

HORSF., Cat. 1000—C. philippensis, CUVIER—SYKES, Cat. 130—BLYTH, Cat. 385—C. pyrrhopterus, VIEILLOT—JERDON, Cat. 231—C. bubutus, HORSF.—C. castanopterus, STEPHENS—*Mahoka*

H.—*Kuka,* Beng.—*Marmowa,* at Monghyr—*Jemudu-kaki,* Tel. *i. e.* 'Euphorbia-hedge Crow'—*Kalli kaka,* Tam., *i. e.* 'Hedge Crow'—'Crow Pheasant' of Europeans in India.

The Common Coucal.

Descr.—Whole head, neck, lower back, upper tail-coverts, and all the under parts, richly empurpled black; tail glossed with green; upper part of the back and wings bright deep rufous bay.

Bill black; irides crimson; legs black. The feathers of the forehead have the barbs of the feathers few in number, bristly and strong, and the feathers of the neck and breast have strong spiny shafts.

Length 19 inches; extent 23; wing $7\frac{3}{4}$; tail 10, bill at front $1\frac{3}{10}$; tarsus 2; hind claws 1.

The young vary very much; some (females) are barred throughout with rufous and blackish above, and with dusky and whitish beneath; tail barred with pale grey bands; wings also prettily banded. Others (young males) resemble the adult, but the colours are more dull. The young have the bill reddish at the base above, and on the lower mandible. Some of the young birds moult into a second dress like that of the next species, which seems analogous to the *hepaticus* state of *Cuc. canorus.*

The 'Crow-pheasant,' as it is popularly called in India, is a very common and universally spread bird throughout the entire country, extending through all the Burmese provinces, Malayana, and the isles. It frequents wooded and cultivated grounds, edges of paddy fields, open spaces in the jungles, beds of rivers and dry nullahs, and particularly sides of hedge-rows, whence its Tamul and Telugu names. It feeds chiefly on the ground, on which it walks and even runs with facility. It eats various large insects, centipedes, scorpions, lizards, and small snakes, also slugs, caterpillars, &c. I was informed by a good shikaree that it occasionally pilfers eggs from the nests of other birds. It makes its way through trees, readily running up the boughs with considerable celerity, often elevating its large tail, and climbing or hopping among the branches; whence, if followed or observed,

it makes its way out at the opposite side of the tree. When seen in tolerably open ground, with only a few trees or bushes about, it is easily caught, being a stupid bird and of slow flight, and a horseman will easily ride it down in the open plain. It has a loud deep sonorous call, like *whoot, whoot, whoot,* repeated slowly several times in succession. It is said to inflate its throat to a great degree whilst uttering this sound, at the same time bending down the head and elevating the tail. The young bird, Mr. Blyth remarks, almost constantly repeats a strange hoarse sound like a person choking, or sort of *guk-kop-kop.* When alighting on a branch of a tree, and sometimes when it alights on the ground, it raises its tail over its back. It makes a large nest of twigs, or grasses, or green flag-leaves, domed at the top, and the aperture on the side, and lined with dried leaves. It is usually placed in the most dense and inaccessible thickets. The eggs are two to five in number, pure white and oval. Burgess says that the exterior of the shell is very soft, and of a chalky texture, easily getting scratched or stained. This, as Mr. Blyth remarks, shows an affinity to the eggs of *Crotophaga,* which are white, rough and chalky externally; but if this layer be detached, the egg is shewn to be deep blue. It breeds from January to July, according to the locality.

A closely allied species, differing chiefly in its larger size and in the width of its tail-feathers, occurs in Malacca; *C. eurycercus,* A. Hay; and another from Ceylon, *C. chlororhynchos,* Blyth, is remarkable for its bill of a greenish-yellow color and larger than in its congeners.

218. **Centropus viridis,** Scopoli.

Cuculus, apud Scopoli—Blyth, Cat. 387—Horsf. Cat. 1002—C. bengalensis, Gmelin, apud. Jerdon, Suppl. Cat. 231 bis—and C. lepidus, Horsf. apud Jerdon, 2nd Suppl. Cat.—C. affinis, Horsf.—C. tolu, Raffles—C. pumilus, Lesson—C. dimidiatus, Blyth.—C. pygmæus, Hodgson—C. rectunguis, Strickland—Polophilus Lathami, Leach.

The Lesser Indian Coucal.

Descr.—Adult.—Head, hind-neck, upper tail-coverts, tail, and beneath, glossy green-black; wings and back rufous, or chesnut, infuscated at the tips of the wings, and often more or less so on the back, scapulars and tertiaries; tail-coverts much elongated.

Bill black; irides red; legs plumbeous.

Length 15 inches; wing $6\frac{1}{2}$; tail 8; bill at front 1; tarsus $1\frac{1}{2}$; hind claw nearly 1.

The young birds are pale rufous above, with broadish black bands, the rufous forming narrow bands on the upper tail-coverts and tail; and the black, narrow bands on the back and wings; the head and neck are streaked longitudinally; the feathers being dusky with a pale rufous centre; under parts flavescent whitish, with only a few dusky specks and rays: bill pale yellow-horny.

In another state, in the adult female, the general colour is light rufous, more or less infuscated above, dingy yellowish-white below; the spinous shafts to the feathers of the head, neck, wing-coverts, and breast, yellowish-white, and showing conspicuously; being set off with blackish, which brings out the contrasts, and the feathers are more or less barred transversely, especially the scapulars, back, and the long upper tail-coverts. In a further stage the feathers are black with yellowish-white shafts on the head, back, wing-coverts, and breast, to a greater or less extent; and to this the fully adult plumage appears to succeed.

The small Indian Coucal is a somewhat rare bird, but spreads, more or less, through most parts of India. I have had it from the Eastern Ghâts, from Mysore, and Central India. Mr. Blyth has it from Cuttack, from Lower Bengal, &c.; and I have seen it at Rajmahal and Caragola, in Upper Bengal, in grass jungle. It also occurs in the sub-Himalayan region. It appears to be more common in the countries to the east of Bay of Bengal, from Arracan to the islands. Tytler states, that it is common about Dacca, where found in bush-jungle. "The calls vary," says he, "and are curious, one resembling the bark of the Bengal Fox; whilst the other might be imitated thus,—*cluck cluck, cluck, gouk, gouk, gouk, kurr, kurr, kurr, &c.*" I obtained the nest and egg of this bird in June; the eggs are pure white, and very round. The nest, composed of

straw and grass, resembled a large ball supported on sticks, with a hole in the side; the nest was well concealed, and was with considerable difficulty discovered.*

Gen. TACCOCUA, Lesson.

Char.—Bill short, or of a moderate length, much compressed, the culmen regularly arching; commissure and gonys straight, or slightly concave; nostrils basal, in a slight depression near the gape, with a tuft of bristly feathers bordering their upper edge; wings rounded; 3rd and 4th quills nearly equal and longest; tail long, graduated; tarsus high; feet adapted for walking, of moderate size, the hallux short; claws short and moderately curved.

This, remarks Mr. Blyth, is a mere terrene form of *Phœnicophaus.* They have a shorter, more compressed, and highly coloured bill. There is no bare skin round the eye, and the eye-lashes extend round the front of that organ; the feathers of the head, also, are very bristly. In habit they most resemble the Coucals; and indeed they may be said to be *Centropodinæ*, with the short hallux and claw of *Zanclostomus.* The group is peculiar, as far as we know, to India proper, none having been found to the east of the Bay of Bengal.

This genus comprises four species, or races, which resemble one another very closely; but differ in some details of size and coloration.

219. Taccocua Leschenaultii, LESSON.

Zanclostomus sirkeer, JERDON, Cat. 230—and 2nd Suppl. Cat. 230—BLYTH, Cat. 381—*Jungli tolah*, H.—*Adavi chilluka*, and *Potu chilluka*, Tel., *i. e.*, Jungle Parrakeet, and Ant-hill Parrakeet.

THE SOUTHERN SIRKEER.

Descr.—Above, pale earthy brown; head inclining to ashy; throat whitish; fore-neck and breast ashy, tinged with ferruginous; belly dark ferruginous, there being a marked distinction between the two colours; feathers of the head, neck and breast, with the

* Since the above was in type, I have had the opportunity of seeing it at Dacca, where it is certainly very abundant. I also obtained two nests, the one with two, the other with four white eggs. The nests were, in both instances, formed by the living grasses rudely bent down among the thorny twigs of a bush to form a seat for the eggs, and then continued upwards, forming a dome over the nest.

shafts, black and glistening; upper tail-coverts long; lateral tail-feathers dark-brown, broadly tipped with white.

Bill cherry-red, yellowish at the tip; feet plumbeous; irides reddish-brown.

Length 15 to 15½ inches; wing 5½ to 5¾; tail 8.

This species is only found in Southern India. I have procured it on the eastern Ghauts, in the Deccan, also on the Neilgherries, in grassy slopes near jungle, at from 5,000 to 6,000 ft. of elevation. It frequents hilly and bushy tracts, feeds mostly on the ground, is frequently seen about white-ants' nests, whence a Telugu name for it, the appellation of Parrot being given from its red bill.

220. Taccocua sirkee, Gray.

Centropus, apud Gray—Hardw., Ill. Ind. pl. 28—Cent. cuculoides, Smith, J. A. S., X., 658.—Coccyzus chrysogaster, Royle, List of Birds—Blyth, Cat. 380—Horsf., Cat. 1003.

The Bengal Sirkeer.

Descr.—Above pale satin-brown; beneath ashy-brown on the fore-neck and breast, tinged with ferruginous, and passing gradually into the ferruginous of the belly, flanks, and the tibial plumes; this hue is darker here than in the last, and browner about the vent and under tail-coverts; feathers of the head and neck also black-shafted.

Length 17 inches; wing 6; tail 9½.

This species is found in the North-Western Provinces, and up to Dehra Dhoon; also in Goruckpore and other parts of Bengal.

221. Taccocua infuscata, Blyth.

J. A. S. XIV., 200—Blyth, Cat. 378—Horsf., Cat. 1004—Zancl. sirkee, apud Hodgson.

The Northern Sirkeer.

Descr.—Above dusky-brown, washed with green; the feathers black shafted; beneath paler, slightly ferruginous on neck and breast; belly and lower tibial plumes deep ferruginous.

Bill and feet as in the others.

Length 19 inches; wing 6½; tail 10; tarsus 1⅝.

This, the largest species of all, is found in the lower regions of the Himalayas, in Nepal and Sikim, and the adjoining Terai; extending, it would appear from Horsfield's Catalogue, as far north-west as Kumaon. Either this species or T. *sirkee*, was observed by Dr. Adams, who saw it in flocks, with a loud harsh voice and feeble flight. It had partaken of lizards, locusts, and beetles.

222. Taccocua affinis, Blyth.

J. A. S., XV, 19—Blyth, Cat. 379.

The Central Indian Sirkeer.

Descr.—Above, dusky-brown, tinged with green; neck and breast brownish ashy; belly and lower tail-coverts ferruginous; tibial plumes brownish.

Bill, irides, and feet, as in *sirkee*, but the bill vertically deeper and more abruptly curved.

Length 17 inches; wing 6; tail 9; tarsus $1\frac{1}{2}$.

This species most resembles *T. infuscata* in colour, but it is smaller; the breast is less rufescent, and the lower parts are not so dark as in that species; its legs too are more slender, and the bill different. It has been procured in Central India, Midnapore, Rajmahal, and Monghyr. I procured it only at Saugor; unless it was the species I obtained at Jaulnah in the Deccan, which, from the dimensions given exceeding those of Southern India, it probably was.

Blyth remarks that it is possible that these four races may prove to be local varieties of a single species.

The American Cuckoos have points that ally them both to *Coccystes* and *Centropus*, and it may be that they do not form a decided family group, but grade into the Old World forms. Many of them are ground-feeders, and they have elongated tarsi. None are truly parasitic, but *Coccyzus Americanus* has been known to deposit her eggs in the nests of other birds. *Diplopterus* is a remarkable form, with the aspect of a *Taccocua*; beneath the tail coloured like that of a Hornbill, white, with a broad central black band.

ıe African or Madagascar birds of the genus *Coua* appear to g to the *Centropodinæ*.

. remaining families of the Scansores are as follow :—

Ramphastidæ, or Toucans.

These are birds of large size, with huge curved and inflated bills, zygodactyle toes and bright plumage, green, yellow and red, mixed with black; peculiar to the intra-tropical and juxta-tropical regions of America. In their anatomy they closely resemble the Barbets, and their clavicles, which in the latter group are not prolonged to form a furcula, are short and dagger-shaped. They are also, like the Barbets, almost exclusively frugivorous; and, like the Hornbills and other large billed birds, they toss their food into the air, and catch it in the throat. They hop actively and with most airy lightness about the tops of lofty trees, and nestle in holes. Their tail is often reflected close over the back; and at roost the enormous bill is completely buried in the plumage. The tongue is long and slender, and barbed laterally, a trace of which only is seen in the Barbets. Their wings are short, and the tail long, consisting, as in the Barbets, of ten feathers.

Some of the Cuckoos, *Phænicophaus*, make an approach to this family, of which Gould has published a very splendid Monograph.

Musophagidæ, Touracos, or Plaintain-eaters.

These are peculiar to Africa. They are birds of moderate size and mostly of rich plumage, with a short and somewhat Woodpecker-like crest. The bill is moderately large and inflated, with serrated edges, but is short. They have the feet in pairs, or rather the outer hind-toe is directed at a right angle with the fore toes, and the short hind toe can also be turned sideways. The wing is short and rounded, and the tail moderate, consisting of ten feathers. The clavicles are not quite united, and the sternum is small; the stomach slightly muscular, and the intestines longer than in Toucans and Barbets, being without cæca, and they have a distinct gall-bladder. They feed on fruit, chiefly berries, which they swallow whole; and

they hop and run along the branches of trees like Monkeys, said, leaping with great activity and having a loud discordant Their eggs are deposited in hollow trees. The true *Muso[illegible]* are rich red and blue, the species of Touracos are green with splendid crimson on the quills, and those of *Chizaeris* are birds of plain and sombre plumage, evidently very closely linked to the next family, the *Colies*, if, indeed, the latter is worthy of being separated as such. One species of *Chizaeris* is named *Cacatua* by the Somalis, who, says Speke, look on it as a kind of Parrot. Mr. Blyth has called my attention that the beak and feet of this bird, as well as its plain colouring, are the same as in the Colies.

Coliidæ, Colies.

Like the last, these are peculiar to Africa, although a *Colius* has been described by the name of *Indicus*. They comprise a little group of plain-coloured birds, with small thick beaks, which led to their being, at one time, classed with the Finches. Their wings are weak, they fly badly, and the tail is long and of ten feathers. The toes are three in front, the fourth directed laterally inwards, and the short side-toe is said to be capable of being directed forwards. They live on fruit, do not perch, but walk or climb with their whole tarsus applied to the surface, creeping as it were on the belly; hence, as well as from their colour, they are called 'Mouse-birds' at the Cape. They climb well, one foot after the other, a good deal in the manner of the Parrots, help themselves on with their beaks, and sleep pendently like the Lorikeets. Unlike the preceding family, these birds are builders of nests, breeding in society, and producing white eggs.

These particularly interesting birds thus serve, in some degree, to relieve the isolation of the Parrots, which they tend somewhat to connect with *Musophaga*; on the other hand, they have a remote tendency towards some of the Weaver-birds (*Ploceidæ*), one African group of what is named *Coliuspasser*, and has a lengthened tail; and the breeding in company, moreover, is another trait of most of the Weaver-birds.

Tribe TENUIROSTRES.

Bill, in most, slender and long, often curved; in a few, short and thick; wings moderate or long.

Food the nectar and pollen of flowers, with insects; in a few, soft fruit.

The birds composing this tribe vary much in their structure, like those of the two last; but there are certain points of similarity, both of features and habits that pervade the whole: and, as a general rule, they differ in their external characters so much from the other tribes of the *Insessores*, that one can have but little hesitation in referring them here.

The most marked character is the long and slender bill of nearly all of them; though some have remarkably short beaks, and others have the bill of considerable strength, moderately long, and very slightly curved. In the most typical groups, the plumage is rich and beautiful; in many, with shining metallic hues of gold, purple, or green, and in one of the groups the axillary feathers, and others, are developed to their maximum. Many live much on the nectar and pollen of flowers, which they sip on the wing, or clinging to the flower-stalks, through a tubular tongue in some instances, or by means of a soft tuft or pencil in others. Most of these partake also freely of the minute insects that infest flowers; many hunt for spiders, or seek their insect-food on the trunk and branches of trees; a very few on the ground. Some build their nests within holes of trees; others fix them neatly to, or suspend them on, branches; some lay white, others coloured, eggs.

The Tenuirostral birds comprise the following groups, which may, for convenience, be divided into those with rich and gorgeous colours, and those with plain or mottled plumage.

A. Richly coloured:—

1st. *Troidæ.*—Humming birds. 2nd. *Nectarinidæ*—Honey Suckers. 3rd. *Paradiseidæ*—Birds of Paradise.

B. half plain plumage. 4th. *Meliphagidæ*—Honey-eaters. 5th. *Certhiadæ*—Creepers. 6th. *Upupidæ*—Hoopoes.

I am aware that some of our best ornithologists ignore this tribe altogether; and I am perfectly willing to admit that the birds composing it do not form a harmonious whole; but the same may be said of the last two tribes, which are all but universally admitted to be natural and good groups, and I cannot see under what other great division these birds could be satisfactorily classed. Moreover, I believe that, with perhaps two exceptions, the differences between those who allow, and those who disavow this tribe, are chiefly nominal, and that most systematists would and do arrange the families much as I have done, with such points of divarication only as are caused by the arrangement which each individual chooses to select by placing this or that family at the beginning or end of the tribe.

The two exceptions above alluded to are the Humming-birds and the Hoopoes. Some naturalists, as before mentioned (p. 154), place the former of these groups with the Swifts; but whilst acknowledging the great similarity of structure, I cannot ignore the great difference of external appearance, their gorgeous plumage, neatly constructed nests, and peculiar geographic distribution; and in conformity with their habits, I place them among the *Tenuirostres*, which they thus serve to connect with the *Fissirostres*.

The Hoopoes, though so widely distant from the Humming-birds, are also allied in structure to another fissirostral group, the Hornbills, as alluded to at p. 242; and were a linear arrangement practicable, I would have no objection to place them next their fissirostral affines; but, as we are obliged to work in circles (as it were), I prefer placing them in the present tribe, as a very aberrant form, and perhaps, leading from some of the American Ground-creepers (*Furnarinæ*) to the Hornbills. Some African birds that appear to belong to the Hoopoes, *Irrisor*, have undoubted affinities with the true *Promeropidæ*, from which indeed they have only lately been separated.

The Creepers are generally classed apart from the previous families, but are nevertheless allowed by all to be closely connected, as well to some of the *Nectarinidæ*, as to the *Melaphagidæ*, through *Climacteris*; and they certainly are more nearly related to the birds composing this tribe than to any other of the *Insessores*.

The relations *inter se* of the other families are admitted by all, and they form Bonaparte's *Curvirostres*, and, says that accomplished naturalist, they lead to the Crows through the *Glaucopinæ.* Some of the tribe lead towards the Thrushes and Bulbuls, by means of several of the *Meliphagidæ* on one side, and the Orioles and *Phyllornis* on the other; and perhaps some are related to the *Pardalotus* group. Other external relations have been already pointed out.

Fam. NECTARINIDÆ, VIGORS.

Syn. *Cinnyridæ*, Swains.; *Promeropidæ*, Gray, Honey-suckers, or Sun-birds.

Bill of various length, generally long, more or less curved, generally entire; nostrils basal, usually nearly covered by a scale; wings moderate, more or less rounded; nine or ten primaries, 3rd and 4th longest; wing-coverts short; tarsus moderate, with broad scales; feet moderate; hind-claw equal to, or scarcely longer, than that of the middle-toe.

The Honey-suckers of the old world take the place of the Humming-birds of America, some of them almost rivalling the brilliant and metallic splendour of their relations across the Atlantic. Like them, they chiefly feed on the nectar of flowers, but mix it more with minute insects infesting flowers, and many live chiefly on spiders. They vary much in form of bill, from the long sickle-like bill of *Arachnothera* to the short, thick, almost Finch-like, bill of *Piprisoma* and *Prionochilus*, and the mandibles of some are finely serrated; the tongue is long, pointed, bifid in some, but not brushed. The central tail-feathers of many are elongated. The sexes generally differ in colour, the male only having the brilliant plumage. In some this is assumed as a nuptial dress; in others it is a permanent attire. Most of the birds of this group are from Asia, many are from Africa, and a few from the Oceanic province. Most of them build domed nests, more or less suspended from the end of twigs or small branches.

We have several well marked divisions in this family; 1st, the *Nectarininæ* or Sun-birds, from Africa and Asia; 2nd, *Promeropinæ,* from Africa; 3rd, *Drepaninæ* from Oceania; 4th, *Diceinæ,*

or short-billed Flower-peckers, from Asia and Australia; 5th, *Cærebinæ* from America. They approximate some of the Australian Honey-eaters, through *Myzomela* and other forms, and perhaps join the *Pardaloti* through such birds as *Smicrornis*, if this be really different from *Piprisoma*.

Sub-fam. NECTARININÆ.

The *Nectarininæ* or Sun-birds of India and Africa comprise a large number of mostly very beautiful birds, which, in the brilliancy of their hues, and the general style of coloration, quite remind one of the Humming-birds, and they are popularly known in India as Humming-birds. They are divided into several genera, which vary in the length of bill, strength of feet, and mode of coloration. The first on the list have plain colors, and the bill greatly lengthened.

Gen. ARACHNOTHERA, Temm.

Char.—Bill very long, moderately curved; base broad and somewhat three-sided; tip entire; nostrils small, oval, completely covered by a membrane, which only opens by a lateral slit; wings long; 3rd and 4th longest; tail short, broad, even; legs large and strong; lateral toes slightly unequal; hind-toe and claw large.

These birds are clothed in sombre plumage, generally green or grey above, and yellowish beneath; and there are a good number of species, chiefly from Malayana; only two extending into India proper.

223. Arachnothera magna, HODGSON.

Cinnyris, apud HODGSON, Ind. Rev. 1837—BLYTH, Cat. 1341—HORSF., Cat. 1058—A. inornata, apud McLelland, P. Z. S., 1839.—A. chrysopus, HODGS—*Dom-siriok-pho*, Lepch.,—*Yedong-pichang*, Bhot.

THE LARGE SPIDER-HUNTER.

Descr.—Above, yellow-greenish; each feather with a central dull black streak; lower parts yellowish-white, similarly striated; tail with a subterminal black band, and an albescent spot beyond this, on the inner web of the outer tail-feathers.

Bill dusky; legs bright orange; irides light brown.

Length 8 inches; extent 11¼; wing ½; tail 2⅛; bill at front 1⅝; tarsus ¾.

This, the giant of the Indian species, is found only in the Himalayas within our province, but extends into Assam, and the Burmese countries. I found it at Darjeeling from the level of the lowest valleys to about 3,000 feet only, generally frequenting high trees, and picking various insects off the flower-buds and leaves I obtained the nest several times,—a very large but loose structure of grass and other fibrous materials, with the hole at one side near the top, and usually containing two or three rather large eggs, of a deep olive-brown colour throughout.

224. **Arachnothera pusilla**, Blyth.

Cat. Birds, p. 328—Horsf., Cat. 1064—A. affinis, Blyth, Cat. 1348—A. inornata, apud Blyth (olim)—Cinnyris longirostris, Jerdon, Suppl. Cat., No. 236 bis.

The Little Spider-hunter.

Descr.—Above, olive-green, more or less fulvescent; the crown darker, with scale-like feathers, merely green-edged; a dark streak from the base of the upper mandible; chin and throat white; rest of the under parts dull greenish-albescent, passing into bright pale yellow on the belly; tail-feathers slightly tipped with whitish, chiefly on their inner webs, forming a spot most distinct outwardly.

Bill dusky; legs plumbeous-brown; irides brown.

Length 5¾ inches; wing 2½; tail 1½; bill at front 1½; tarsus $\frac{6}{10}$.

This Spider-hunter is declared by Horsfield to be very closely allied to *A. longirostra*, Latham, Temm., Pl. col. 84, f. 1, and only to differ in being a little smaller, and in the yellow of the abdomen not being so marked. I have found it several times in the forests of the Malabar coast, the Wynaad, and in parts of Mysore bordering the Neilgherries. It is, however, rare, and it has not been noticed elsewhere in India; but it is common in the countries to the east of the Bay of Bengal.

Several nearly-related species are found in Malayana. Among others, *A. Phayrei*, Bl., from Pegu, very close to *A. magna*; *A.*

flavigastra, Eyton, equally as large as *A. chrysogenys; A. inornata* and *A. modesta*, Eyton; all from Malacca.

We now come to the typical Sun-birds, of rich and often metallic plumage, which were named *Cinnyris* by Cuvier, but to which the prior appellation given by Illiger, *Nectarinia*, is now applied.

They are birds with bill long or moderate, slender, slightly curved; the tip acute and entire; the edges minutely denticulated; base of upper mandible overlapping the edge of the lower one; nostrils short, oval, and basal, placed in a fossa. The wings are rounded; 1st quill short; 4th usually the longest; the tail moderate or long, even or graduated; tarsus longish, slender.

They have, of late, been greatly sub-divided; and as Horsfield, Gray, and others have adopted these divisions, I shall follow them here. Birds of this family are called *Shakar-khora*, *i. e.*, Sugar-eater, H.—*Mán-changi*, or *Phul-chingi*, Beng.—*Munaga-jitta*, Tel., *i. e.* 'the birds of the *Erythrina* flower.'—*Sag-vit-pho*, Lepch.—*Chong-jip*, Bhot.

Gen. ÆTHOPYGA, Cabanis.

Char.—Bill of moderate length and curvature; tail graduated, with the central tail-feathers much elongated.

Two or more groups may be found in this genus. The first has the predominant colour fine scarlet or red, and the rump usually sulphur-yellow (whence Cabanis's name). They are found both in India and Malayana.

A lesser section may be made of those which have the throat and breast of the same red as the back, and the tail glossy-green or purple.

225. **Æthopyga miles**, HODGSON.

Cinnyris, apud HODGS., Ind. Rev. 1837—BLYTH, Cat. 1351 (partly)—HORSF., Cat. 1066—Nect. Seheriæ, TICKELL.—C. labecula, MCLELL.—C. goalpariensis, ROYLE, Ill. Him. Bot., pl. 7, f. 1—GOULD'S Birds of Asia, pl.

THE HIMALAYAN RED HONEY-SUCKER.

Descr.—Forehead and crown of head dark shining metallic green, more or less glossed with purple; hind-head, cheeks, and

ear-coverts, back, scapulars, and lesser wing-coverts, dark sanguineous; rump bright yellow; upper tail-coverts, dark green; wings and occiput dull brownish-green; tail, with the central feathers, purple at base (where hidden by the upper tail-coverts) and at the tip, bottle-green in the middle; the other tail-feathers dusky-black, some of those next the central pair, scarlet; throat, fore-neck, and breast, entirely brilliant scarlet-carmine, with glossy violet stripe on each side, from the corner of the lower mandible to more than half way down the neck; below the breast, dull light brownish-green.

Bill horny, pale at the tip and beneath; legs brown; irides brown.

The female is russet olive-brown above; wings and tail darker; and pale olive beneath, flavescent on the lower abdomen and under tail-coverts, the central tail-feathers not being elongated.

Length of male 6 inches; extent $6\frac{1}{2}$; wings $2\frac{3}{8}$; tail 3; bill at front $\frac{3}{4}$; tarsus $\frac{1}{2}$; weight $\frac{1}{4}$ oz.

This beautiful Honey-sucker is found all along the Himalayan range, and in Central India, as far south as N. L. 21°, if Tickell's bird be identical with this species rather than the next; also in Assam, Sylhet, and the Burmese provinces. I believe that it does not ascend the Himalayas to any great height, not above 2,000 or 2,500 feet.

Colonel Tytler says that it is common not far from Dacca,* and that he has kept them alive in a cage, feeding them on sugar and water, honey, and bread and milk.

226. Æthopyga Vigorsii, Sykes.

Cinnyris, apud Sykes, Cat. 134—Cinnyris concolor, Sykes (the female)—Gould's Birds of Asia, pl.—N. Goalpariensis (in part) Blyth.

The Violet-eared Red Honey-sucker.

Descr.—Head metallic green; nape, neck above, shoulders; and scapulars, deep sanguineous; lower part of back sulphur-yellow; upper tail-coverts, middle tail-feathers, and outer webs of all the others (except the outermost pair), metallic green; throat, neck, and breast, scarlet; a stripe, from the chin to the breast, shining violet; ear-spot also violet; wings, lateral tail-feathers, sides of the lower part of the back, and a band below the breast, dusky; abdomen grey.

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* Probably brought from the Tipperah hills.

Bill black; irides dark brown. Length $5\frac{1}{2}$ inches; tail $2\frac{1}{2}$

The female is greenish-olive above; wings and tail darker; lighter beneath. Length 5 inches; tail 1.

This species differ from the last in being somewhat larger, and more robust, with a shorter tail, and by the crescentic metallic blue mark on the ear-coverts. It has also some light yellow striæ intersecting the scarlet of the breast. The tail of the female is almost square.

Colonel Sykes found it inhabiting the lofty trees of the dense woods of the ghats, and found the larvæ of flies, spiders and ants, in its stomach. I never procured this handsome Honey-sucker in the Malabar forests, but I obtained a specimen and saw others in the Bustar country, south-east of Nagpore, in thick forests, at about 2,000 feet of elevation. In the absence of any named locality in the Western Ghats, I should suppose it may be from the Mahableshwur hills. I am not aware of its having been obtained on that side of India by any other collector, since Colonel Sykes's time.

To this minor section belongs the Malayan *Æ. siparaja*, Raffles, vel *mystacalis* of Temminck.

Another small section comprises two species with the whole lower parts bright yellow. In one the tail has the colors of the last subdivision (purple), in the other it is lively red. In one of these species, at all events, the gay plumage is only assumed as a summer dress. The birds are both Himalayan.

227. **Æthopyga Gouldiæ,** Vigors.

Cinnyris, apud Vigors, P. Z. S., 1831—Gould, Cent. Him. Birds, pl. 56—Blyth, Cat. 1353—Horsf., Cat. 1068.

The Purple-tailed Red Honey-sucker.

Descr.—Male, with the crown, ear-coverts, and throat, rich glossy violet or purple; a brilliant shoulder-tuft of the same; hind-neck, sides of neck, back, scapulars, and lesser wing-coverts, deep crimson; upper tail-coverts, the middle pair of tail-feathers, and outer edges of the others, glossy violet or purple; the rest of the tail dusky; a yellow band on the rump; wings dusky, edged with olive-

green; breast and belly bright yellow, with sometimes a tinge of flame-colour about the middle.

Bill black; legs brown; irides brown. Length $5\frac{1}{2}$ inches; wing $2\frac{1}{8}$; tail 3; bill $\frac{9}{16}$; tarsus $\frac{1}{2}$ inch.

The female is dull olive-green, paler beneath, slightly cinereous on the back.

This Honey-sucker is found throughout the Himalayas, from Kumaon to Sikhim, and extends to Assam, Sylhet, and Arracan. I know not at what elevation it occurs, as I did not myself procure it at Darjeeling; but imagine that it does not reach a high elevation.

228. **Æthopyga ignicauda,** Hodgs.

Cinnyris apud Hodgson, Ind. Rev. 1837—Blyth, Cat. 1354—Horsf., Cat. 1069.—Cin. rubricaudata, Blyth—Nect. phænicura, Jardine, Nat. Libr., pl. 29.

The Fire-tailed Red Honey-sucker.

Descr.—Male in summer plumage. Head violet; nape, back of neck, and back, very rich scarlet; lesser coverts and scapulars glossless green; a yellow band across the rump; wings dusky, edged greenish; upper tail-coverts scarlet; tail, with the lengthened middle feathers, scarlet-crimson; the outer feathers red externally, dusky on their inner webs, and greenish at the tip; throat and fore-neck intensely rich, dark, shining purple in the middle, and brilliant violet laterally; lores and ear-coverts glossless black; the rest of the under parts bright yellow, passing into greenish on the flanks and lower tail-coverts.

Bill black; legs brown; irides brown. Length 7 inches; wing $2\frac{1}{4}$; tail (middle feathers) 4 to 5 inches; bill in front $\frac{3}{4}$; tarsus $\frac{8}{10}$.

The male in winter plumage is olive-green above; rump and beneath yellow; chin, cheeks, and part of the neck, blue-grey, with a greenish gloss; breast dashed with fiery red; tail and upper coverts intense igneous-red. The female is wholly olive-green, paler and yellowish beneath; upper tail-coverts and breast-spot igneous.

This fine Honey-sucker is found in the Eastern Himalayas, from Nepal to Bootan, and extends into Assam and Sylhet. At

Darjeeling it appears about April in considerable numbers, the males being all in the process of donning their beautiful nuptial plumage; and before it is quite perfect, most of them have left the immediate vicinity of the station; but where they go to, or in what zone they breed, I could not fully determine. I did not see them there at any other season of the year; but I killed them at the foot of the hills about October.

The next two birds belong to a group, coloured more like the the species of *Leptocoma*, but with the tail-feathers lengthened, and the yellow rump of the last. Both are Himalayan forms.

229. Æthopyga Nipalensis, Hodgs.

Cinnyris, apud Hodgson, Ind. Rev. 1837—Blyth, Cat. 1355—Horsf., Cat. 1070—Jard., Nat. Libr., pl. 27—Gould, Birds of Asia, pl.

The Maroon-backed Honey-sucker.

Descr.—Head and nape, throat, upper tail-coverts, two lengthened central tail-feathers, and the outer margin of the others, brilliantly glossy dark steel-green; lores and ear-coverts black, the latter glossed with purple; neck and back dark glossless maroon-red; rump bright yellow; beneath, from the throat, yellow; the middle of the breast tinged with flame-colour; scapulars, and margins of the wing-feathers, olive-green.

Length $5\frac{3}{4}$ inches; ext. $6\frac{3}{4}$; wing $2\frac{1}{8}$; tail $2\frac{3}{4}$; bill at front $\frac{13}{16}$; tarsus not $\frac{5}{8}$.

The female is uniform olive-green, faintly tinged with rufous, pale beneath; tail short. Young males have the glossed parts of the mature bird, of a dull earthy-brown.

This species is nearly allied to *Æ. Gouldiæ*. It is found in the Eastern Himalayas, from Nepal to Bootan, and is also extremely common in the Khasia hills. It is the most common species at Darjeeling, being often seen in gardens in the station. I obtained a nest of this bird, very neatly, though loosely, made of moss, domed at the top, with the entrance at the side, overhung by a sort of projecting roof; it contained two eggs of a dusky-greenish tinge, with numerous small dusky spots.

230. Æthopyga Horsfieldii, Blyth.

Nectarinia, apud Blyth, J. A. S. XII., 975—Blyth, Cat. 1356.

The Green-backed Honey-sucker.

Descr.—Whole head and hind-neck, with the throat, brilliantly glossed green and purple; upper part of the back, scapulars, and wing-coverts, dull olive-green; the lower back and the rump light yellow; tail, with the upper tail-coverts, glossy green; central feathers the same, broadly tipped with black; the other feathers dusky-black, more or less edged with glossy green; quills dusky, olive-green on their outer edges; beneath, from chin, yellow, deeper and tinged with flame-colour on the breast, paler or greenish-yellow on the vent, flanks, thigh-coverts, and under tail-coverts.

Length $5\frac{1}{4}$ inches; wing $2\frac{1}{8}$; tail $2\frac{3}{4}$; bill at front $\frac{3}{4}$; tarsus $\frac{5}{8}$.

This species appears to be confined to the North-west Himalayas, where it replaces *Æ. nipalensis*, from which it only differs in having the back green, instead of maroon-red; in the quills having mostly a white edge, indistinct in the last; and in being somewhat smaller. These differences, however, appear to be constant; but the birds may probably interbreed with each other where they meet, as in other closely affined races, and one specimen in the Museum, As. Soc., Calcutta, has some of the feathers of the back partially red.

The next bird belongs to a group distinguished by rich and dark colouring, more like some of the succeeding genus.

231. Æthopyga saturata, Hodgs.

Cinnyris, apud Hodgson, Ind. Rev. 1837—Blyth, Cat. 1357—Horsf., Cat. 1071—C. Assamensis, McLell.—Nect. Hodgsonis, Jardine, Nat. Libr., pl. 29.

The Black-breasted Honey-sucker.

Descr.—Crown, occiput, nape, moustache, and neck-streak, brilliant violet-blue; throat, breast, belly in front, lores, ear-coverts, sides of neck, wings, and rump, deep black; scapulars and interscapulars dark maroon; a faint trace of yellow on the rump; upper tail-coverts, and middle tail-feathers, steel-blue; flanks,

posterior part of abdomen, and lower tail-coverts, dull pale olive-green; the rest of the tail black; the greater wing-feathers very slightly edged with olive-green.

Bill black; legs brown; irides brown. Length 6 inches; wing $2\frac{7}{8}$; tail $3\frac{1}{4}$; bill at front $\frac{3}{4}$; tarsus $\frac{1}{2}$; ext. 7; weight $\frac{1}{4}$ oz.

The female is dull green above; beneath, the same, with an ashy tinge on the chin, throat and breast, flavescent on the vent and under tail-coverts; tail nearly square.

This species, which deviates somewhat from the typical colours of this genus, but has the lengthened tail-feathers, and a trace of the yellow rump so conspicuous in the others, is found in the South-east Himalayas, extending into Assam. I found it in Sikhim most common from 3,000 to 5,000 feet of elevation.

Gen. LEPTOCOMA, Cabanis.

Char.—Tail square or nearly so; bill moderately curved. Mostly of small size.

This genus of Sun-birds forms a small group of very lovely plumage; the head brilliant green, the back maroon, the rump glossed violet or green, and the throat purple. Two species with the lower parts light yellow, are peculiar to India.

232. **Leptocoma Zeylonica**, LIN.

Certhia, apud LINNÆUS—BLYTH, Cat. 1368—HORSF., Cat. 1082—JARDINE, Nat. Libr., pl. 20—Cinn. sola, VIEILLOT, apud JERDON, Cat. 234—C. lepida, apud SYKES, Cat. 132.—

THE AMETHYST-RUMPED HONEY-SUCKER.

Descr.—Head above and angle of the wing bright metallic glossy green; back, scapulars and wing coverts, deep maroon-red; wings dusky-brown, the quills edged with cinnamon-brown; tail black; throat, neck, rump, and upper tail-coverts, fine metallic amethystine-purple; the rest of the body beneath, yellow, divided from the amethyst of the neck by a narrow maroon bar; bill and legs black.

Length $4\frac{1}{2}$ inches; wing $2\frac{2}{10}$; tail $1\frac{1}{2}$; bill at front $\frac{5}{8}$.

The female is dull green above, with a slight tinge of rufous; the quills edged with pale brown; the tail dusky-black; under

parts pale yellow; albescent on throat and fore-neck. Young males resemble the females, but have the throat more yellow.

This species is spread throughout India from the extreme South to Bengal, not reaching the Himalayas. It is rare in Central India, and is apparently not found in the North-west provinces. It extends through Dacca into Assam. It is exceedingly abundant in Madras, more so I think than in Lower Bengal. It does not change its plumage at the breeding season, the males always retaining their brilliant plumage. It may be seen in every garden flitting from flower to flower, and it builds a very neat nest of grass, vegetable fibres, spiders' web sometimes, with a hole at the side near the top, overshadowed by a canopy of the same materials, and lays usually two eggs of a pale greenish tinge, with small dusky spots. It has a feeble chirp, like that of *Certhia familiaris*, and it has also a weak shrill short of song. This bird feeds on the honey of flowers, and small insects which infest flowers, buds, &c. Layard states that it is very pugnacious—abundant in southern part of Ceylon. Blyth informs us that many are taken at Calcutta by bird-lime for sale, and that they can be kept alive for many days on sugar and water, honey, or fruit-jam.

233. Leptcocoma minima, Sykes.

Cinnyris, apud Sykes, Cat. 125—Jerdon, Cat. 235—Blyth, Cat. 1369.—Horsf., Cat. 1083—Jard., Nat. Libr., figd. frontispiece.

The Tiny Honey-sucker.

Descr.—Head and nape fine metallic green; back, scapulars, and wing-coverts, rich bright sanguine-red; rump the same, but with a fine violet or amethystine gloss; wings and tail dusky-brown; throat and neck fine amethystine; the rest of the lower parts pale yellow.

The female is olive-brown above, with a red rump, and pale yellow beneath.

Length $3\frac{1}{2}$ to $3\frac{3}{4}$ inches; wing $1\frac{9}{10}$; tail $1\frac{2}{10}$; bill at front $\frac{2}{3}$.

This beautiful little species has only been found on the West coast of India, extending from about N. Lat. 18° to Travancore, and

passing over into Ceylon. Layard states that it replaces *N. Zeylonica* in the north of the Island. It is by no means common. I have seen it up to nearly 3,000 feet on the slopes of the Neilgherries and also near the level of the sea in Malabar.

Gen. ARACHNECHTHRA, Cabanis.

Char.—Bill rather lengthened and well curved. Plumage throughout dark, glossed on the breast and upper parts, and with a tuft of yellow feathers in the axilla.

These are birds of the plains chiefly, and are great spider-eaters. One of them (at least) has a vernal moult.

234. **Arachnechthra Asiatica**, LATH.

Certhia, apud LATHAM—BLYTH, Cat. 1360—HORSF., Cat. 1085—Cin. mahrattensis, LATH., SYKES, Cat. 133—JERDON, Cat. 232—C. orientalis, FRANKLIN—C. epauletta, HODGS.—C. currucaria, L., apud SYKES, Cat.—C. strigula, HODGS.

THE PURPLE HONEY-SUCKER.

Descr.—In summer, breeding plumage, this species has the whole head, neck, throat, breast, and back, glossy green-purple; the abdomen purplish-black; wings and tail dull black, the latter faintly white-tipped; a tuft of crimson and yellow feathers at the axilla of the wings. After breeding, the fine purple garb is doffed, all except a long stripe from the chin to the vent, in which state it is the *currucaria* of authors; and Col. Sykes was quite right in stating that this was not the livery of the young bird. He, however, unaware of the change of plumage, considered it to be a distinct species. It has the upper parts dull olive-green; beneath bright yellow; shoulders and central stripe beneath, brilliant glossy violet; wings and tail dusky or black.

The female is greenish brown-grey above, greenish-yellow beneath, deepest on the throat and breast, and lighter on the vent and under tail-coverts; quills dusky; tail black.

Bill and legs black; irides dark red-brown. Length $4\frac{1}{2}$ inches; wing $2\frac{3}{10}$; tail $1\frac{1}{2}$; bill at front $\frac{3}{4}$; tarsus $\frac{6}{10}$.

This species is perhaps the widest-spread of all of the Indian Honey-suckers. It is found throughout India, in many districts being the only one seen: *viz.*, through the greater part of the West of Central India, the N. W. provinces, and Sindh. It is also found in Ceylon and N. Burmah. It ascends to the top of the Neilgherries, 7,500 feet, but I did not see it at any great height on the Himalayas. Blyth believes that, at Calcutta, both sexes put on the bright livery of the nuptial season; but in the south of India the female does not, I think, do this. I had a pair breeding at my door at Jalna, and saw the female daily in her usual dull costume. Layard, too, distinctly implies the same, in his account of the bird in Ceylon. This bird, like the others of its tribe, has a feeble but sweet chirping note.* It feeds partly on the nectar of flowers, but a good deal on insects, small cicadellæ, flies, spiders, &c. It occasionally hovers in the air before a flower whilst extracting the honey, but generally hops about and clings to the smaller twigs and flowering branches. I have occasionally seen it snap at an insect in the air. Whilst feeding it frequently opens and closes its wings.

I have seen its nest several times. On the occasion above alluded to, a pair built their nest just outside my house-door at Jalna. It was commenced on a thick spider's web, by attaching to it various fragments of paper, cloth, straw, grass, and other substances, till it had secured a firm hold of the twig to which the spider's web adhered, and the nest suspended on this was then completed by adding other fragments of the same materials. The entrance was at one side near the top, and has a slightly projecting roof or awning over it. The female laid two eggs of a greenish-grey tinge, with dusky spots. The first nest was accidentally destroyed after the eggs were laid, and the couple immediately commenced building another in a small tree at the other side of the door, and in this instance, as in the last, commenced their operations on a fragment of spider's web. They reared two young ones from this second nest.

The eggs have been described by another naturalist as greyish-white, speckled and ringed with cineritious-grey. Tickell describes

* Much resembling the song of *Phylloscopus trochilus*, according to Blyth.

the nest as bottle-shaped, with a lengthened neck, suspended from the end of a small branch in thick bushy trees, gardens, banks of tanks, &c., the nest soft, composed of little bits of leaves, grasses, fine twigs, and chips of bark, woven together with a fibrous substance resembling tow; entrance by a small circular hole at the bottom, and the side lined neatly with seed-down; eggs three, pale greenish white, minutely speckled with dusky, which forms a divided zone at the larger end. The entrance from the bottom is a most unusual and extraordinary anomaly in this family, and I suspect must have been accidental. Blyth states that it visits Calcutta only during the cold season, but that, before they leave, most of them have assumed the nuptial dress. In Nepal it is probably a summer visitant only.

— 235. Arachnechthra lotenia, L.

Certhia, apud Linnæus—Blyth, Cat. 1359—Horsf., Cat. 1084—Jardine, Nat. Libr. pl. 23—Cin. polita, Sparrm., apud Jerdon, Cat. 233—Certh. purpurata, Shaw.—Edw. Birds, pl. 265.

The Large Purple Honey-sucker.

Descr.—Above, brilliantly glossed with metallic green and purple, abdomen dull brownish-black; axillary tuft yellow and red; wings and tail black; the latter slightly glossed purple; throat and breast rich purple; a narrow bright marrone collar separates the purple of the breast from the black of the abdomen.

Bill and legs black; irides dark brown. Length $5\frac{1}{2}$ inches; wing $2\frac{5}{10}$; tail $1\frac{6}{10}$; bill at front 1; tarsus $\frac{6}{10}$.

The female is light dull olive-grey above, the wings brown, and the tail slightly glossed black; beneath pale yellow.

A specimen in the Museum As. Soc., Calcutta, has the winter or *currucaria* plumage of the last, *viz.*, a central glossy green stripe on the throat and breast, and a spot on the shoulders of the wings; otherwise as in the female. I do not recollect seeing the bird in this plumage in Malabar, where I had many opportunities of observing it, and rather think that it must have been a young bird. This fine species, though sometimes confounded with the last,

differs conspicuously in its much longer and more arched bill, also in the green play of colours in the upper part of the plumage.

It is common along the Malabar coast, and also tolerably so in the more wooded parts of the Carnatic, as about Madras and other large towns. It frequents both jungles and gardens. Layard, who observed it in Ceylon, states that its nest exactly resembles that of *N. Asiatica.* At Tellicherry I have seen it frequently enter my verandah to feed upon spiders. I have not observed it elsewhere in India. Sykes does not include it in his Catalogue; but Horsfield, in his Catalogue, records a specimen from Col. Sykes's collection.

Sub-fam. DICÆINÆ.

Bill short, usually depressed at the base, thick in some; tail short; wings rather long; of very small size.

The birds of this division are chiefly found in Malayana, extending on the one side to Australia, on the other to India.

There are three or four distinct types of form in this sub-family.

Gen. DICÆUM, Cuvier.

Char.—Bill short, broad at the base, suddenly compressed beyond; tip entire; culmen curved; nostrils triangular; wings lengthened, with nine primaries; the first three about equal, the 2nd slightly the longest; tail short, even; feet with the lateral toes unequal, the outer toe a good deal syndactyle.

This genus contains some of the smallest birds in India. It is much developed in Malayana, extending through the islands to Australia. There are two types of color; the one plain-coloured, peculiar to India proper, the other with gayer tints, common to this country and Malayana.

—— 236. **Dicæum coccineum,** SCOPOLI.

Certhia, apud SCOPOLI—HORSF., Cat. 1088—D. cruentatum, LIN.—BLYTH, Cat. 1371—D. erythronotum, CUV., and MCLELL. —D. rubricapillum, LESSON—Edwards, pl. 81.

THE SCARLET-BACKED FLOWER-PECKER.

Descr.—Male—Above, the head, hind-neck, back and upper tail-coverts, bright crimson-scarlet, or vermilion; sides of the head and

of the neck, descending on to the sides of the breast, wings, and tail, black, glossed with violet-blue, mostly on the sides of the neck and shoulders; beneath, pale fulvous, becoming olivaceous-ashy on the flanks.

Female—Above dull ashy-olive, with some of the feathers of the upper tail-coverts crimson; wings and tail brown-black; beneath fulvous, paler than in the male. Length $3\frac{3}{8}$ inches; wing 2; tail 1; bill at front $\frac{3}{8}$ to $\frac{7}{16}$.

This pretty little Flower-pecker is only found, within our province, in the lower part of the South-east Himalayas, and in some parts of Lower Bengal. It is not rare in the vicinity of Calcutta. It is, however, only an outlier here, its chief location being Assam, Burmah, and Malayana.

237. **Dicæum chrysorhæum,** TEMM.

Pl. Col., 478, 1—BLYTH, Cat. 1373—HORSF., Cat. 1092—D. chrysochlore, BLYTH, J. A. S., XII., 1009.

THE YELLOW-VENTED FLOWER-PECKER.

Descr.—Above olive-green, slightly more yellowish on the rump and upper tail-coverts; quills and tail blackish, the former edged albescent; beneath white, tinged yellowish on the breast and abdomen, and the under tail-coverts bright saffron-yellow; two stripes from the base of the lower mandible down the sides of the neck, and some longitudinal streaks on the breast and abdomen, dusky-green.

Length $3\frac{5}{8}$; wing $2\frac{1}{4}$; tail $1\frac{1}{8}$; bill at front $\frac{3}{8}$; tarsus $\frac{1}{2}$.

This species has been found, though very rarely, in Nepal. It is more common in Arakan and Tenasserim, and extends to Malacca. I have only, myself, seen it at Moulmein.

238. **Dicæum minimum,** TICKELL.

Nectarinia, apud TICKELL, J. A. S., II., 577—BLYTH, Cat. 1375—HORSF., Cat. 1091—C. erythrorhyncha, LATHAM—JERDON, 2nd Suppl., Cat. 237 bis—Certhia Tickelliæ, BLYTH, J. A. S., XI., 889—Myzanthe inornata, HODGSON—*Sungti-pro-pho*, Lepch.

Tickell's Flower-pecker.

Descr.—Above ashy-olive, paler and flavescent beneath; wings and tail darker; bill pale fleshy, with a dusky tip; legs leaden brown; irides brown; sexes alike.

Length $3\frac{1}{8}$ inches; wing $1\frac{3}{4}$; tail $\frac{7}{8}$; bill at front $\frac{3}{8}$; tarsus $\frac{7}{16}$.

Young birds have the bill fleshy-red, except at the tip; and Latham's name was found on a drawing of one in which this colour was exaggerated.

It is found throughout Lower Bengal, and the jungles of Central India, extending to the Himalayas, Assam, and Arakan, and also to Ceylon. Blyth observed it in extreme abundance in the hill-jungles about Moulmein. It is also found, though rarely, in Southern India, being there replaced by the next species. It frequents the tops of high trees, and feeds on the nectar of flowers and minute insects; Layard found that it occasionally ate viscous berries, probably those of a *Cuscuta*.

239. **Dicæum concolor,** Jerdon.

Jerdon, Cat. 137—Blyth, Cat. 1374—Jerd., Ill. Ind. Orn. pl. 39—*Chitlu-jitta*, Tel.

The Neilgherry Flower-pecker.

Descr.—Above brownish-olive, beneath greenish-white; wings and tail brown; sexes alike.

Bill dusky-brown; legs cinereous-brown; irides dark brown.

Length $4\frac{2}{10}$ inches; wing $2\frac{1}{10}$; tail $1\frac{1}{10}$; tarsus $\frac{1}{2}$; bill at front $\frac{4}{10}$.

This species very much resembles the last, but is larger, much more albescent beneath, and the bill wants the fleshy tinge of the other, and is stronger and deeper than that of the last bird. It is very abundant on the top of the Neilgherries, also in most of the forests of Malabar, and in the woods of the Eastern Ghâts. It frequents the highest branches of lofty trees, hopping actively about the small twigs and flowering branches, and feeding on various minute insects; also occasionally on the nectar of flowers, and small flower-buds.

Gen. PIPRISOMA, BLYTH.

Char.—Bill short and subconical, acutely triangular as viewed from above; ridge of the upper mandible angulated, and that of the lower slightly so; both of them curved, the lower one perhaps most; tip of the upper overhanging the lower mandible; nostrils almost closed by the nasal membrane; gape unarmed; feet rather small: tarsus equal to the middle toe; outer toe syndactyle; claws moderately hooked; wings long, reaching to end of tail; tail short, even.

This genus bears the same relation to the plain-coloured species of *Dicæum*, that *Prionochilus* does to the brighter-coloured species. It is a remarkably thick-billed *Dicæum*, though somewhat resembling the brighter-coloured *Prionochilus*. Only one species is known; unless *Smicrornis*, Gould, from Australia, be considered indentical with it, which, judging from the figure, seems not improbable.

240. **Piprisoma agile**, TICKELL.

Fringilla, apud TICKELL, J. A. S., II., p. 578—BLYTH, Cat. 1380—Parisoma vireoides, JERDON, Cat. 133—Pipra squalida, BURTON, P. Z. S., 1836—*Chitlu-jitta*, Tel.

THE THICK-BILLED FLOWER-PECKER.

Descr.—Above dull ashy-olive, greenish on the rump and upper tail-coverts; wings and tail brownish, the former edged green, and the tail slightly edged at tip with whitish, which forms a terminal spot on the inner web of the outermost feathers; beneath, dirty greenish-white, with a few faint striæ on the throat, fore-neck, and flanks.

Bill and legs leaden; irides orange-yellow. Length 4 inches; wing $2\frac{1}{4}$; tail $1\frac{2}{10}$; tarsus $\frac{1}{2}$.

This curious little bird is found over the greater part of India, from the Himalayas to the Malabar coast and Ceylon, most commonly in jungly districts, but it is also occasionally seen in groves of trees in bare country. I have procured it in Goomsoor, on the Eastern Ghâts, in Malabar, and the Deccan: Blyth obtaining it in the Midnapore jungles. It associates in small flocks, and frequents the

highest branches of trees, hopping briskly about, and feeding on small spiders, insects, insects' eggs and larvæ, aphides, &c. &c. It has a weak piping note.

Gen. Myzanthe, Hodgson.

Char.—Bill as in *Dicæum*, but shorter; wings long, reaching to the end of the short tail, the first four quills about equal; feet small.

This genus, proposed by Hodgson, and founded on a Nepal bird, is found to extend to Australia, the well known *Dicæum hirundinaceum* being a typical species. Another occurs in the *D. erythrothorax*, Lesson, from the Island of Borou, N. Guinea, which is *D. pectorale* of Müller and Schlegel.

241. **Myzanthe ignipectus**, Hodgson.

J. A. S., XII., 983—Blyth, Cat. 1377—Horsf.—1093—*Sangti pro-pho*, Lepch.

The Fire-breasted Flower-pecker.

Descr.—Above black, with a mingled purplish and green gloss, or almost glossy dark green; quills dull black; beneath buff, with a vermilion patch on the breast.

Bill blackish; legs dusky-brown; irides brown.

Length $3\frac{1}{2}$ inches; wing $1\frac{7}{8}$; tail $1\frac{1}{8}$; bill at front $\frac{7}{16}$; tarsus $\frac{3}{8}$.

The female is glossless olive-brown above, buff beneath.

This little Flower-pecker has only been found in the South-eastern Himalayas, from Nepal to Bootan, and on the Khasia hills. It is common in Sikhim, from 2,000 to 6,000 feet or so, and feeds on small insects and flower-buds. Hodgson says that it makes an ingenious pendulous nest; and Gould figures the nest of the Australian species, suspended from a slender twig.

Gen. Pachyglossa, Hodgson.

Char.—Bill very short and Swallow-like, but less depressed, thick, nearly conic as viewed laterally; upper mandible finely denticulated; nostrils only a narrow slit; gape unarmed; wings large; first three primaries equal; tarsus short; inner toe shorter than the outer one; claws short.

242. **Pachyglossa melanoxantha**, HODGSON.

J. A. S., XII., 1010.

THE YELLOW-BELLIED FLOWER-PECKER.

Descr.—Above dusky-cinereous, tinged with olive-green on the head and elsewhere; upper tail-coverts green; beneath paler; throat white, passing down the centre of the fore-neck and breast; belly and lower tail-coverts bright yellow; axillaries and inside of the wings white; outer tail-feathers with a large subterminal white spot on the inner web; the next with a similar but smaller spot.

Bill blackish; base of lower mandible yellow; feet greenish.

Length $4\frac{1}{2}$ inches; wing $2\frac{7}{8}$; tail $1\frac{1}{2}$; bill at front $\frac{5}{16}$; tarsus $\frac{1}{2}$ inch.

This curious little bird has hitherto only been found in Nepal. Hodgson says that it feeds on small insects and viscid berries, and makes an ingenious pendulous nest, like *Myzanthe*. I was not fortunate enough to procure this bird in Sikhim.

The *Promeropinæ*, from Africa, are of rather large size; with long, slightly curved, bill; a feathered tongue, a long cuneate tail, and magnificent plumage.

The *Drepaninæ*, chiefly from the oceanic province, have a moderate or long arched bill, wings with nine primaries, and a short even tail, the tarsus somewhat long. They approximate the *Dicæinæ*.

The American *Cærebinæ* have the bill moderate, straight, or very little arched, somewhat stout, and notched; the longish wings have nine primaries, with the 2nd, 3rd and 4th longest; the tail is short or moderate, and the plumage brilliant. Like *Certhia*, they creep over trees and feed on honey and insects; some building hanging nests, with a funnel entrance from below, while others have two compartments, in the inner of which the eggs are laid.

Fam. CERTHIADÆ, Creepers.

Bill compressed, acute, entire, usually long, straight or much curved; feet large; toes often syndactyle; hind toe and claw large; tail generally long and cuneated, sometimes short and nearly even.

The family of *Creepers* comprises a great variety of birds, which differ considerably from the more typical Tenuirostral birds, and approach in their habits some of the Scansorial tribe. As a general rule, the bill is long, and more or less curved, the tarsus short, and the hind toe large. The plumage is plain and sombre, generally mottled or variegated. Some nestle in holes of trees, and others build huge fabrics of sticks, or make a large mud nest.

They are divided into *Certhinæ*, or true Creepers; and *Sittinæ*, or Nuthatches: both of which have representatives in India; and the remainder are all from tropical America, and have been divided into *Dendrocolaptinæ*, or Tree-creepers; *Synallaxinæ*, or Ground-creepers; and *Furnarinæ*, or Oven-birds, from the peculiar mud-nest they make. Some of the Creepers approach the Wrens, which are indeed classed with them by Gray* and Swainson, and through which they probably unite with the dentirostral group; others, as the Nuthatches, have distant affinities for the Woodpeckers; and others, again, make a very near approach to the Australian *Melliphagidæ*, one species of *Climacteris* having been mistaken by Temminck for a *Melliphaga*.

Sub-fam. CERTHINÆ, True Creepers.

Bill generally curved, of moderate length, or rather long, slender; wings moderate or long, ample, rounded, of ten primaries; the first short; wing-coverts short; tail longish in most, and with the feathers often stiff and pointed, short in some; toes long and slender, outer toe longer than the inner one, much syndactile; inner toe slightly so; hind toe very long, and its claw longer than the middle one; claws long, compressed, and curved, and all the toes are very mobile.

Most of the Creepers are inhabitants of the Old World, but a few are American. Those which have the tail-feathers stiff, press the tail against the bark of trees to aid them in climbing.

Gen. CERTHIA, Linnæus (in part).

Bill moderate, slender, slightly curved, entire; nostrils basal, partly covered by a vaulted membrane; wings somewhat long,

4th and 5th quills longest; tail long, graduated, with the feathers stiff and pointed; legs short, slender; toes long, inner toe much shorter than outer; hind toe long; claws long, not much curved, slender.

The Tree-creepers are found in very small numbers both in America and the Old World, only two being American. The common Tree-creeper of Europe, *C. familiaris*, is the type of this genus. They creep about the trunks and larger branches of trees with great facility, and feed on insects, especially on beetles and spiders, which they find in the crevices of the bark. They nidificate in holes in trees, making their nests with twigs and grass, and lined with wool and feathers. They lay numerous eggs, from 6 to 9, and they are said to have a pleasing song. In India they are entirely confined to the Himalayan region.

243. **Certhia himalayana**, Vigors.

P. Z. S., 1831—Blyth, Cat. 1133—Horsf., Cat. 1043—Gould, Birds of Asia, pl.—C. Asiatica, Swains.

The Himalayan Tree-creeper.

Descr.—Above, dark brown, each feather centred with pale earthy olive-brown; some of the feathers of the rump and upper tail-coverts ferruginous at the tip; the greater coverts ferruginous at the base, then dusky black, with a light spot; quills brown, faintly barred on the outer web for half the length, and a broad fulvous bar on the inner web; tail light brown, barred closely and numerously with dusky brown; beneath albescent, tinged with pale earthy-brown on the abdomen and flanks.

Bill blackish; legs brown-black; irides brown. Length $5\frac{1}{2}$ inches; wing $2\frac{7}{8}$; tail $2\frac{5}{8}$; bill at front $\frac{5}{8}$ to $\frac{11}{16}$; foot $1\frac{3}{8}$.

The tail is rather short; the middle feathers being slightly pointed, and the laterals very narrow.

This Tree-creeper has only been found in the North-western Himalayas. Adams states that it is pretty common in the woods and forests of the lesser ranges, and in Cashmere.

244. **Certhia nipalensis,** Hodgson.

J. A. S., XIV., 581—Blyth, Cat. 1131—Horsf., Cat. 1044—C. spilonota, Gray, Cat. Birds of Nepal—Gould, Birds of Asia, pl.

THE NEPAL TREE-CREEPER.

Descr.—Above rufous-brown, with pale fulvous-white, central, well defined spots, especially on the head; rump and upper tail-coverts unspotted deep ferruginous; quills brown, edged lighter; a pale fulvous bar on the outer web of most of the quills, except the first three, changing to an oblique white bar on the inner web; tail light ferruginous-brown, unbarred, and the feathers much pointed; beneath pure white, tinged with ferruginous on the sides of the breast; flanks, and lower tail-coverts, deep ferruginous.

Length $5\frac{1}{2}$ inches; wing $2\frac{1}{2}$; tail nearly 3; bill at front $\frac{1}{2}$; foot not quite $1\frac{1}{2}$.

This species has been found in Nepal and on some of the higher mountains of Sikhim.

245. **Certhia discolor,** Blyth.

J. A. S., XIV., 580—Blyth, Cat. 1132—Horsf., Cat. 1045—Gould, Birds of Asia, pl.—*Saddyer-pho*, Lepch.

THE SIKHIM TREE-CREEPER.

Descr.—Above rufous-brown, with diffused pale central spots, not well defined on the head; beneath, pale earthy-brown; rump and upper and lower tail-coverts ferruginous; tail light ferruginous-brown; the feathers much pointed.

Length about 6 inches; wing $2\frac{3}{4}$; tail $3\frac{1}{4}$; bill at front $\frac{9}{10}$; foot $1\frac{1}{2}$.

This species differs from the last especially in the colour of the lower parts, in having no ferruginous on the flanks, in the brown above being less rufous, and in the central spots not being so well defined. It makes the nearest approach to *C. familiaris* of Europe, but has a longer tail. It has only been found in Sikhim. I obtained it frequently at Darjeeling, from 4,000 feet upwards.

Gen. SALPORNIS, Gray.

Char.—Bill long, curved, broadish at base, much compressed beyond the nostrils; wings reaching to the end of the short tail, pointed; 1st primary very short, 2nd nearly as long as 3rd and 4th, which are equal and longest; tail short, even, soft and flexible.

This genus was instituted by Gray for the following species, which is the only one yet known. It only differs essentially from *Certhia*, by its short and even tail.

246. **Salpornis spilonota**, FRANKL.

Certhia, apud FRANKLIN, P. Z. S., 1831.

THE SPOTTED-GREY CREEPER.

Descr.—Above fuscous-grey, white-spotted, with narrow white streaks on the head; throat and abdomen whitish, the latter barred with dusky; tail banded white and fuscous.

Length $5\frac{3}{4}$ inches.

It inhabits the hilly parts of Behar, and probably the hilly regions of Central India, Bundelcund, &c. This bird does not appear to have been found again since Franklin first procured it, except by Hodgson, who received it from Behar, and the exact locality is still unknown. It is probably the hilly and jungly tract that extends from Mount Parisnath (where it is very likely to be found), through Chota Nagpore, towards the source of the Nerbudda.

Gen. TICHODROMA, Illiger.

Char.—Bill very long and slender, slightly curved, trigonal at base, cylindric in front, slightly depressed at tip; nostrils basal, partially covered by a vaulted membrane; wings long, ample; 1st quill short; 4th and 5th longest; tail short, rounded, broad and soft; tarsus moderate; toes long and slender; outer toe syndactyle; hind toe very long; claws moderately curved.

The Wall-creeper clings to rocks and walls of large buildings, never frequenting trees. Only one species is known. It is said to have a double moult, and its coloration is quite peculiar.

247. Tichodroma muraria, Lin.

Certhia, apud Linnæus—Blyth, Cat. 1137—Horsf., Cat. 1046—Gould, Birds of Europe, pl. 239—T. phænicoptera, Tem.—T. sub-himalayana, Hodgs.—T. nipalensis, Bonap.—*Saggorsa lamdong-pho*, Lepch.

The Red-winged Wall-creeper.

Descr.—Above, light cinereous-grey; wings, with the lesser coverts, light carmine; the greater coverts and the primary coverts dull carmine, dusky at the tip internally; quills, except the first three, red on their outer web for the basal half; the rest black, with two large white spots on the 2nd to the 5th primaries; tertiaries with a light grey triangular patch on the outer web, next the red; quills faintly tipped with albescent; tail brownish-black, with a pale whitish tip, wider on the outermost feathers, narrow on the others; beneath, throat and breast white; the rest of the plumage dark slaty-cinereous.

Length $6\frac{1}{2}$ to 7 inches; wing 4; tail $2\frac{1}{4}$; bill at front $1\frac{1}{4}$; foot $1\frac{5}{8}$.

This bird was declared by Bonaparte, in his *Conspectus Generum Avium*, to be distinct from the European species, in having the cheeks and abdomen blackish, passing into the scarcely darker color of the chin; but I can see no difference between specimens from Europe and others from the Himalayas.

It is found throughout the Himalayas, descending in winter to the Alpine parts of the Punjab. It is also found in Cashmere, in Afghanistan, and the south of Europe. I saw it frequently near Darjeeling, but only in winter, from a level of 2,500 to 5,000 ft. or so. I first saw it in a tea plantation at Kursion, hunting along some small bare ravines that the rains had made in the cleared ground; occasionally on the bank of a road. I also saw it on rocks on the road side, and on perpendicular cliffs along some of the rivers. It looks very beautiful when flitting about, the fine red patch on its wings displayed, which it seems fond of doing continually, and, as remarked by Vigne, looking more like a butterfly than a bird. I found that it had eaten chiefly spiders and coleoptera, &c. It

has no call-note. In Europe, it descends in winter from its Alpine home, and is found on walls of old buildings, whence the name given by Linnæus. It is stated to breed in clefts and holes of rocks and buildings, and that the eggs are of a fine, almost vermilion, red.

The only other genus of the sub-family is *Climacteris*, an Australian form, nearly allied to the *Melliphagidæ*.

Sub-fam. SITTINÆ, Nuthatches.

Bill of moderate length, nearly straight, stout, compressed at the tip; wings moderate; tail short, even; toes long and slender; outer toe longest, syndactyle.

The Nuthatches are chiefly found in the Old World and Australia, but there are a few species in North America. They climb trees in every direction, but do not use their tail; and seek for insects in the crevices of the bark, scaling it off with their strong pointed beaks. They breed in holes of trees, making a nest of dead leaves, and laying several eggs, white, with rust-coloured spots. By some the Nuthatches are looked on as having affinities with the Titmice.

Gen. SITTA, Lin.

Char.—Bill moderate, straight, wedge-shaped; tip entire, barely deflexed; nostrils basal, rounded, covered by setaceous tufts; wings rather long, 1st quill short, 4th and 5th equal and longest; tail short, even soft; feet short, strong; the inner toe very short; outer nearly equal to the middle one, all cleft to the base; hind toe long, equal to the tarsus; claws strong, broad, and well curved.

The European Nuthatch is said to live on nuts sometimes (hence its name), which it is said to fix in some convenient crevice and then break by hammering at them with its bill. This habit has not been observed in any of the Indian Nuthatches. The European bird is said to breed in holes of trees, often choosing a deserted Woodpecker's nest, and is described to contract the orifice by a plaster of clay; the nest is made of leaves; the eggs are 6 or 7 in number, white, with rust-colored spots. There are several American species of the genus.

248. **Sitta himalayensis**, Jardine and Selby.

Ill. Orn. 3, pl. 144—Gould, Birds of Asia, pl.—Blyth, Cat. 1143—Horsf., Cat. 1048—S. nipalensis, Hodgson—S. vitticauda, Jameson—S. indica, Burton—*Siddyi-phip*, Lepch.

The White-tailed Nuthatch.

Descr.—Above deep slaty-blue, with a purplish tinge; below pale rufescent-whitish, deepening gradually, and becoming full rusty on the lower flanks, vent, and lower tail-coverts; a black band from the nostrils, through the eye, to the shoulders; quills, and lateral tail-feathers, blackish; a white spot at the base of the two central rectrices, and the lateral ones blanched towards their tips.

Bill dusky-bluish, changing to fleshy-grey towards the base; irides dark brown; legs fleshy-grey.

Length $4\frac{1}{2}$ to $4\frac{3}{4}$ inches; wing nearly 3; tail $1\frac{1}{2}$; bill at front $\frac{9}{10}$; foot $1\frac{1}{2}$.

This Nuthatch is found over most of the Himalayas. It is numerous in Sikhim, from 5,000 feet or less, to at least 10,000 feet. It is very abundant about Darjeeling, frequenting large trees, sometimes at the top, frequently at their base, running round the trunks, up and down, and also on the horizontal branches as well. It picks various insects off the bark, and now and then makes a dart at one in the air. It is usually seen in small parties. It differs structurally from the other Indian *Sittæ* by the bill being wider and more depressed at the base.

249. **Sitta leucopsis**, Gould.

P. Z. S. 1849—Horsf., Cat. 1050—Gould, Birds of Asia, 1, pl. 10.

The White-cheeked Nuthatch.

Descr.—Crown of head and back of neck jet-black; all the upper surface deep blue-grey; primaries black, edged with grey;

central tail-feathers blue-grey; lateral feathers black, tipped with blue-grey; the two outer ones, on each side, with a small spot of white on the inner web near the tip; face, chin, throat, breast, and centre of the abdomen, white, the latter slightly washed with buff; flanks and under tail-coverts bright chesnut; bill black, with a blue-grey base; legs grey.

Length 5 inches; wing $3\frac{1}{8}$; tail 2; bill $\frac{7}{8}$; tarsus $\frac{3}{4}$.

This Nuthatch is from the North-western Himalayas, but appears very rare. It is, not improbably, the supposed White-headed Woodpecker noticed in p. 275.

250. **Sitta castaneoventris**, FRANKLIN.

P. Z. S. 1831—JARD. and SELBY, Ill. Orn., 3, pl. 145—GOULD, Birds of Asia, 1, pl. 9—BLYTH, Cat. 1142—HORSF., Cat. 157—JERDON, Cat. 219.

THE CHESNUT-BELLIED NUTHATCH.

Descr.—Above, greyish-plumbeous, lightest on the head and nape; stripe from the gape, through the eyes, to the nape, black; quills, with the inner webs of the feathers, black; throat, face, and spot on the lateral tail-feathers, white; breast, and under tail-coverts, with the abdomen, deep chesnut-bay in the male, dark cinnamon-colour in the female.

Bill horny-black; legs plumbeous; irides brown.

Length $5\frac{1}{2}$ inches; wing $3\frac{1}{10}$; tail $1\frac{7}{10}$; bill at front nearly $\frac{7}{10}$; foot $1\frac{1}{2}$; weight $\frac{1}{2}$ oz.

This Nuthatch is found in most of the jungles of Southern and Central India, from the extreme South to Rajmahal and Mirzapore. It is rare, however, in the damp Malabar forests. I have killed it in the Wynaad, on the Neilgherry slopes, and in Mysore. It is much more common in Central India, in the jungles near Nagpore, in the Vindhian range of hills, and in Bundelkund, in Goomsoor, and the Northern Circars. It frequents lofty trees, and has the usual habits of the tribe.

251. Sitta cinnamomeoventris, Blyth.

J. A. S., XI., 459—Blyth, Cat. 1141—Horsf., Cat. 1052—Gould, Birds of Asia, pl. 8—S. nipalensis, apud Bonap.—*Sisi*, H. —*Sidhyi-phip*, Lepch.

The Cinnamon-bellied Nuthatch.

Descr.—Above, ashy-plumbeous, lightest on the head and neck; beneath, white on the chin and lores; neck, breast, abdomen, and lower tail-coverts, deep bright cinnamon-chesnut in the male, dull rusty cinnamon-colour in the female; a black eye-streak from the nostrils; the tertiaries have their internal webs black, extending more or less to the outer web; tail-feathers deep black, with a white spot on the inner webs (except the outer one which has only a trace of white), and a grey spot on the outer; all tipped with dusky.

Length $5\frac{3}{4}$ inches; wing $3\frac{1}{8}$; tail $1\frac{3}{4}$; extent 11; bill at front nearly $\frac{3}{4}$; foot $1\frac{11}{16}$.

This species is very closely allied to the last; the bill is broader, not so much compressed, and it is a somewhat stouter bird. It has only been procured in the South-eastern Himalayas. I found it in Sikhim, from 2,000 feet to nearly 6,000 feet. Buch. Hamilton, in his MSS., as quoted by Horsfield, says that he found it at Chunar in mango-groves, in pairs or families, and that it was said to retire to the hills in the rains. Surely he must have had the last species (*castaneoventris*) in view, and not this one.

252. Sitta formosa, Blyth.

J. A. S., XII., 938—Blyth, Cat. 1138—*Tishé kuyi gumbo*, Lepch.

The Beautiful Nuthatch.

Descr.—Black, splendidly variegated with different shades of blue; streaked with cobalt-blue on the head, and with azure-blue on the back, and with whitish, mixed with lavender, on the sides of the neck; the shoulders, lesser wing-coverts, the scapulars, lower back, rump, and upper tail-coverts, verdigris-blue; the greater wing-coverts and tertiaries black, elegantly margined with white at their

tips; the under parts, light rusty-fulvous, paler on the breast, and albescent on the throat; the frontal feathers tipped dingy-white, and round the eye is whitish also; middle tail-feathers lavender-blue, with a black mesial line; the rest black, edged internally with blue, and tipped with duller blue; the outermost feather having a large white spot at the extremity of its inner web, and the next one, a smaller terminal spot of the same.

Bill blackish; legs greenish-horny, with yellow soles; irides dark brown.

Length 7½ inches; wing 4; tail 2¼; bill at front ⅞; tarsus ¾; hind-toe with claw 1.

The 2nd quill is somewhat shorter than in other *Sittæ*, and the hind-claw perhaps less elongated; but it is otherwise a typical *Sitta*, except in size and coloration. Bonaparte makes it a sub-genus, *Callisitta*.

This truly splendid Nuthatch has only been found in Sikhim, and that very rarely. There is one specimen in the Asiatic Society's Museum, none in that of the late E. I. C.'s I procured one example only at Darjeeling, which was said to have been shot at an elevation of between 7,000 and 8,000 feet. Major Tickell informs me that he obtained a single specimen at Darjeeling, which he shot in the station itself. I imagine that it must be chiefly peculiar to the higher regions.

Gen. DENDROPHILA, Swainson.

Char.—General structure of *Sitta*; nostrils large, oval, open, nearly naked, with a very few incumbent hairs; base of bill widened; tip of the culmen slightly inclined downwards; the foot typical, with the hind-toe, if anything, larger.

—253. Dendrophila frontalis, HORSF.

Sitta, apud HORSF., L. T. XIII.—SWAINSON, Zool. Ill., 2nd Ser., pl. 2—JERDON, Cat. 221—BLYTH, Cat. 1144—HORSF., Cat. 1053—Sitta velata, TEM., pl. col. 72, f. 3—S. corallina, HODGS.

THE VELVET-FRONTED BLUE NUTHATCH.

Descr.—Above fine cerulean-blue, with a tinge of lilac on the head; forehead deep velvety black; quills and lateral feathers

blackish, the former more or less edged with blue, the latter tipped with white; beneath, delicate lilac-brownish, darkest on the vent and under tail-coverts, and reddish on the flanks; chin and throat white. The male, even in nestling plumage, is distinguished from the female by having a black sincipital streak.

Bill bright coral-red; legs sienna-yellow; orbitar skin lemon-yellow; irides light straw-yellow.

Length 5 inches; wing 3; extent $8\frac{1}{2}$; tail $1\frac{1}{2}$; bill at front $\frac{4}{10}$; tarsus $\frac{9}{10}$; weight not quite $\frac{1}{2}$ oz.

This lovely little Nuthatch is found over the greater part of India in suitable localities. I have found it on the Malabar coast, on the summit of the Neilgherries, in Central India, in Goomsoor, and also on the Himalayas. It is also found in Ceylon, Assam, Burmah, and Malayana. On the Himalayas I only found it in the warmer valleys, and not common. It is most abundant on the Neilgherries. It is generally found in small parties of five or six, active and restless, creeping round the horizontal branches of trees chiefly, and seeming to prefer the under side, and frequently running down the trunks of trees. It feeds on various small insects and larvæ, which it picks off the bark.

The genus *Sittella* is Australian, and appears to approach *Climacteris* in its plumage; and there is another group found in New Zealand, *Acanthisitta*, Laf. Gray includes in the *Sittinæ* two or three genera of South American birds, which are usually placed in the next sub-family. These are the *Dendrocolaptinæ*, or great Tree-creepers, birds with very various bills, and strong feet, having sharp curved claws; and the tail having the shafts bare and stiff, like those of the Woodpeckers. The *Synallaxinæ* have also the pointed tail, with the outer toe longer than the inner, and syndactyle; the bill moderate, slender, and pointed. They are remarkable for their large nests, sometimes two or three feet in length, made of sticks, and divided by a partition into two chambers, in the inner of which the eggs are laid.

The *Furnarinæ*, or Oven-birds, are the last sub-family; in this the outer toe is only slightly longer than the inner, and very little syndactyle. They seek their food both on trees and on the

ground, on which they run and walk with ease. They build a remarkable nest of clay, straw, and dried herbage, in the form of an oven, with the entrance on one side, and the interior divided into two partitions. By their terrestrial habit they perhaps tend towards the Hoopoes.

Fam. UPUPIDÆ, Hoopoes.

Bill long and slender, slightly curved throughout; the tip acute and entire; nostrils small; wings rounded; tail moderate or long, even or rounded; tarsi short and stout; outer toe syndactyle at the base; toes and claws strong.

This family, and the reasons for placing it here, have been already alluded to (p. 358). They comprise a very small number of birds, chiefly African, one genus extending over the greater part of Europe and Asia, as well as of Africa.

Sub-fam. UPUPINÆ.

Tail with ten feathers; wings long; bill keeled at the base; head with a large erectile crest.

Gen. UPUPA, Lin.

Char.—Bill very long, moderately curved, compressed; gape wide; head with a large crest; nostrils round, slightly removed from the base, destitute of any membrane; wings long, with 4th quill longest; tail even, broad, of ten feathers; tarsus moderate, with transverse scutæ in front, reticulate posteriorly; claws short, that of hallux longer, somewhat straight.

The Hoopoes are ground-feeders, and nestle in holes of trees, or of walls. The few species are found in the Old World, not extending to Australia. The tongue is short and heart-shaped; the mandibles are flat, not even grooved internally; their stomach is membranous; the intestines are devoid of cæca; and the sternum is notched posteriorly.

— 254. **Upupa epops**, LIN.

Pl. Enl., 52—Gould, Birds of Europe, pl. 238—BLYTH, Cat. 194—HORSF., Cat. 1054—SYKES, Cat. 125 (in part)—Upupa indica, HODGS.—*Hudhud*, Persian and Hind.—*Kat-huto*, Sind.

The European Hoopoe.

Descr.—Head, with the feathers of the crest, pale cinnamon-rufous, tipped with black, and with a white space between the black and the rufous on the median and posterior feathers; hind neck, sides of neck, interscapulars, and shoulder of the wings, pale fawn, passing into brownish-ashy; the middle of the back banded white and black; the upper tail-coverts white at the base, ended with black; wings black; the coverts black, with two large white bars; the primary quills with a white spot or bar near the tip, on the first on the inner web only, on the others upon both webs; the secondaries and tertiaries with three and finally four white bands; tail with a broad white oblique band, about the middle; beneath the chin whitish; the throat and breast pale rufous fawn, ashy on the sides of the breast; abdomen white, with black streaks and dashes; under tail-coverts white.

Bill black, reddish at the base; irides red-brown; legs brownish-black.

Length 12 to $12\frac{1}{2}$ inches; wing $5\frac{1}{2}$; tail 4; bill at front $1\frac{3}{4}$ to $1\frac{13}{16}$; tarsus not $\frac{7}{8}$.

The Hoopoe of Europe is found in the Himalayas, in Northern India, in Lower Bengal, and in various parts of India as far as the Neilgherries. It extends to Assam, and perhaps to Upper Burmah. It is found over the south of Europe, North Africa, and most of Asia. I procured it at Darjeeling. There it is a winter visitant only. In Nepal and Bengal also it is only a winter bird; and Adams states that it migrates southwards from Cashmere to the Punjab and India in winter. In captivity the Hoopoe is said to be readily tamed, and to show great intelligence and susceptibility of attachment. Mussalmans venerate the Hoopoe, on account of their supposing it to have been a favorite bird of Solomon, who is said to have employed one as a messenger. It is stated that the oily matter secreted by the sebaceous gland on the tail-bone, assumes, in the female at breeding time, and on the young in the nest, an intolerable stench, whence an idea prevalent in some countries, that this bird makes its nest of cow-dung.

Dr. Adams states that, in Cashmere, where it is very common, the King-crow (*Dicrurus longicaudatus*) very often robs it of its prey. I found a Hoopoe breeding on the Neilgherries in May, and am not now certain whether it was the present species or the next. It nestles in holes of walls, trees, &c., and lays several pale greenish-blue or bluish-white eggs. Pallas states that he once found the nest of one within the exposed and barely decomposed thorax of a human body, with seven young birds just ready to fly, which defended themselves by a most fetid fluid. Its voice is a pretty loud, double or treble *hoop*, whence its name in most languages. It feeds on the ground, walking with ease, and picking up various insects, as coleoptera, ants, grubs, and small grasshoppers.

255. **Upupa nigripennis**, Gould.

Horsf., Cat. 1055—U. minor, Sykes, Cat. 125—Jerdon, Cat. 238—U. Senegalensis, apud Blyth, Cat. 195—*Hudhud, H.*—*Kondeh pitta*, Tel., *i. e.* 'crested bird,' also *Kukudeu guwa*, from its call.

The Indian Hoopoe.

Descr.—Very similar to the last, but smaller, and distinguished by the generally darker hue of the rufous of the head and crest, and there is no white on the crest; the white wing-bands being also smaller and less conspicuous, and the first primary wants the white spot entirely; the hind-neck and interscapulars are deeper rufous, inclining to brown and less to ashy; the rump is dusky-black, with a downy white ending to the feathers; the chin is rufous, and this colour extends along the abdomen to the vent, with only a few dusky streaks on the lower abdomen; vent and under tail-coverts white.

Length 10½ inches; extent 18; wing 5 to 5½; tail 4; bill at front 1¾ to nearly 2; tarsus ⅞.

I am at a loss to know why Gould named this species *nigripennis*, as the name is much more applicable to a S. African species, which appears to want the white spots on the wings altogether.

The Indian Hoopoe is found throughout Southern India and Ceylon, extending through part of Central India to the North-western Provinces and the Dehra Doon.

It frequents groves of trees, thin forest-jungle, gardens, and the neighbourhood of villages, and old deserted buildings, such as mosques, tombs, and large mud walls. It feeds entirely on the ground, walking with great ease, and picks up various insects, as coleoptera, ants, small grasshoppers, and, as Mr. Burgess informs us, the larvæ of the ant-lion (*Myrmeleo*). It frequently, too, searches the dung of cattle for grubs and other insects. When feeding, the crest is depressed; but it invariably erects it at once on seating itself. Its flight is undulating and yet vigorous, for, as Mr. Philipps remarks, and as I have often witnessed, a trained hawk almost always fails in seizing it. Its call, like that of its congener, is a deep *whoot*, usually of two syllables, whence its Persian name. I have obtained the eggs occasionally from a hole in an old building or mud wall; they were four or five in number, very pale blue, (like skim-milk, as Burgess says,) and of a very elongated form.

All the Hoopoes from Burmah differ from this last species in having the white spot on the 1st primary; but, like it, want the white on the crest, and the rufous colour is deep; the chin is not white, and the lower parts are strongly dashed with dusky. In these birds, too, the bill is very long, 2¼ to 2⅜ inches. This race abounds in Burmah, and is a permanent resident there; for I found it breeding in holes of trees in June and July. A specimen from Ceylon, and another from the Dehra Doon, in the Museum of the Asiatic Society, appear to belong to this race. Is it a distinct species? If so, *U. longirostris*. One or two others are peculiar to Africa, *viz.*, *U. minor*, and *U. senegalensis*.

The remaining birds of this family belong to the sub-family *Irrisorinæ*, formerly classed with *Promerops*, and are peculiar to Africa and Madagascar.

Irrisor is described as going in small flocks, feeding on cockroaches and other insects on the trunks and branches of trees, over which

they creep somewhat like Woodpeckers. They have a loud chattering note, are restless in their habits, and have a disagreeable smell. *Falculia* and *Fregilupus* are placed by some as a distinct sub-family.

The remaining families of the *Tenuirostres* are the Humming-birds, the Honey-eaters, and the Paradise-birds. The Humming-birds, TROCHILIDÆ, are the gems of the feathered creation, the smallest and the most lovely of all. Their bill is very slender, of various length and curvature; the wings are long and pointed, the quills sometimes of great strength; the tail of ten feathers, usually short and nearly even, lengthened and forked in some; the tarsus is short and feeble, and the toes are small. They are often adorned with various ornamental tufts of feathers, like the Birds of Paradise, and some of the *Epimachinæ*; and the feathers are frequently scale-like, with metallic lustre.

In their anatomy they resemble the Swifts, having a similarly formed sternum, without any notch behind, a small gizzard, no cæca; and their body-feathers possess the supplementary plume; but they differ from the *Cypselidæ* by having a complicated inferior laryx,* and their toes are composed of the usual number of phalanges. The tongue is formed of two filaments, and is capable of protrusion, like that of the Woodpeckers; in some it is furnished near the tip with retroverted spines.

The Humming-birds are found only in America, and chiefly in the tropical regions, often at great elevations. They feed on the nectar of flowers, and also on flies and other small insects that harbour in flowers, some (it is said) seizing them in the air. They build a neat and delicate nest, of various soft materials, upon branches or leaves, and lay almost invariably two white eggs.

Mr. Gould has just completed a magnificent monograph of this group, which now numbers above 400 species.

The MELLIPHAGIDÆ, or Honey-eaters, of Australia and neighbouring islands, form a well marked group, distinguished by the long

* The largest of the Humming-birds, *Patagona gigas*, has a simple vocal apparatus, with only the ordinary *sterno-tracheal* long tendinous muscles.

protrusile tongue, furnished with a tuft or pencil of fibres, by means of which they extract the honey and pollen of flowers. The bill is various, short, somewhat conic, and notched in some, long, slender and curved in others; the wings are of moderate length, with the first three quills graduated, or the 3rd and 4th equal; tail usually moderate; the tarsus short, and outer toe much syndactyle, and the hind toe large. They feed on soft fruit and insects, as well as upon the nectar of flowers; usually build somewhat neat nests in bushes, or often suspended from twigs, and generally lay two eggs. They are not clothed in rich plumage; chiefly various shades of green, yellow and black, and are occasionally ornamented by various tufts and wattles,

The Honey-eaters resemble the ordinary dentirostral birds, such as Thrushes, in their anatomy. They probably unite with the *Nectarinidæ* through the *Myzomelæ*, which have the wings more rounded than the others, and perhaps also with the Birds of Paradise by means of *Sericulus*. The Orioles and *Phyllornis* are placed among the *Melliphagidæ* by same systematists, and certainly they bear some resemblance to those birds (which may be that of affinity) both in appearance and habits, but for reasons connected with the geographic distribution of the *Melliphagidæ*, I prefer keeping these birds of Africa and India apart among the Thrushes. *Zosterops*, too, is classed by many in this family; but its geographic distribution over Africa and India, as well as the oceanic province, equally forbids its being placed here.

The PARADISEIDÆ, or Birds of Paradise, have been variously placed by systematists. Cuvier, relying chiefly on the thick conical beak of some, with the nostrils clothed with short plumes, placed them in the *Conirostres*, not far from the Crows (but at the same time next to his tribe of *Tenuirostres*), and in this he has been followed by many others. Swainson, with a truer intuition of their affinities, placed them in the present tribe; and taking their rich gorgeous plumage, wonderfully developed shoulder-tufts and uropygials, and their habits as far as known, I think there can be little doubt that this is their true place. With regard to the birds belonging to this family, I nearly agree with Bonaparte in one of his later writings, and would include in it the

true Birds of Paradise; the *Epimachus* group, including *Ptiloris*; the *Astrapiæ*, the *Phonygamæ*, and, more doubtfully, the *Glaucopodinæ* of New Zealand. Omitting the last, which (according to Bonaparte) unite this group to the *Fregilinæ*, we have an assemblage of birds of moderate or large size for this tribe, and mostly of rich and magnificent plumage, almost all from New Guinea and the neighbouring islands, with one or two from Australia. They may be said to unite with the *Nectarinidæ* on the one hand, through *Ptiloris*, and to the *Melliphagidæ*, as before stated, by *Sericulus*. The bill is various, short, thick, and notched in some, curved and moderately slender in others; their feet are stout, and the claws well curved; the wings moderate or long, and the tail variously developed. The true Birds of Paradise are said to be polygamous, and their magnificent plumes to be, in fact, seasonal, and they display these in the manner of a Peacock: but their habits are still very little known. *Ptiloris*, which looks like an overgrown *Nectarinia*, is said to have much of the habits of the Creepers.

Tribe DENTIROSTRES.

Bill of moderate size, small, usually with a tooth or notch in the upper mandible near the tip; toes three before and one behind, the outer front toe usually slightly syndactyle. This tribe, like all the others, is incapable of any rigorous definition; the subordinate characters of wings, tail and feet, being greatly diversified. It is not the less, however, a natural group, and differs from most of the members of the remaining tribe, the *Conirostres*, by some marked peculiarities of structure and habits.

The bill in *Dentirostres* is, in general, less thick, and more slender, and the upper mandible especially is usually a good deal thicker than the lower one, and the tooth or notch (from which the name of the group is taken) is very generally, though not uniformly, present, and its absence has led some systematists erroneously to separate, solely on this account, certain birds from their very near affines.

As a general rule, the great majority of this tribe are insect-feeders; though many live at times much on fruit, and some even

feed on small hard seeds or grain. They all construct nests of various degrees of neatness, and most of them lay coloured eggs. They are all of small or moderate size.

In their anatomy they closely resemble one another, as well as the last and the succeeding tribes. The sternum has only one emargination posteriorly, varying somewhat in size, and occasionally reduced to a foramen; the furcula long, slender, and having a compressed vertical appendage; the manubrial and costal processes are both prolonged; the brain is large; the lower larynx is complicated, and acted on by four pairs of muscles; the stomach is more or less muscular; the intestines are long, with two minute cæca, but both of these last varying somewhat in different families.

They are all able to inflect the voice, though some of them do so rarely, or not at all; and our finest singing birds belong to the present tribe. The young of all are hatched naked, and they moult their nestling plumage in the first year, with the exception of the remiges and rectrices. With few exceptions, *viz.*, the Australian *Maluri*, and some of the small Flycatchers, the *Bhringa*, and certain of the Pipits and Wagtails, none have a distinct vernal moult; at least they do not change their colours as many of the last and as several of the succeeding tribe do. As a general rule, the birds of this tribe are less gregarious than those of the Conirostral group.

The division of this tribe into families, and their limitations, is attended with much difficulty, owing to their intimate relations with each other. Most English ornithologists divide them into the following families,—Shrikes, Thrushes, Flycatchers, Warblers, and Fruit-eaters; and I see no reason for changing these, although, in several cases, I differ from Gray, Horsfield, and others, with regard to the contents and extent of some of the families. Many ornithologists, at the present day, prefer keeping the various groups apart, without attempting to bring them together into large divisions; but, as I have previously stated, I prefer, in all cases, to endeavour to bring them into groups of successively increasing value. The fmilies adopted in the present work, and their succession, are as follow:—

1st.—*Laniadæ*, Shrikes.—These are, typically, birds chiefly of moderate size, with the beak strong and compressed, and the tooth of the upper mandible well developed. They live chiefly on insects, also on small birds and mammals, and take their prey either on the ground, or on the branches and leaves of trees, a few catching insects on the wing.

2nd.—*Muscicapidæ*, Flycatchers.—These are birds of chiefly small size; their bill is typically much depressed, and broad, with well developed rictal bristles; and the tarsi are feeble. They mostly seize insects in the air, a few descending to the ground, or picking them off leaves.

3rd.—*Merulidæ*, Thrushes.—These are, typically, ground-feeders, hopping, and picking up snails, worms, and insects, and also at times berries. Their bill is of moderate length and strength, not depressed, but rather compressed, the rictal bristles not much developed. The tarsi are moderately developed, strong and lengthened in most.

4th.—*Brachypodidæ*.—Short-legged Thrushes, including the Bulbuls and Orioles. These are arboreal birds, with short legs and feet, and live chiefly on fruit.

5th.—*Sylviadæ*, Warblers.—These are mostly small birds, with more or less slender bills; moderate or long tarsi; and by far the greatest number of them feed on insects, some on the ground, others upon trees.

6th.—*Ampelidæ*.—This group comprises, according to my views, a considerable number of birds of somewhat various structure, and some of the members of which have been bandied about a good deal, owing to the uncertainty of their position. I include in it, of Indian birds, the *Pari*, the *Leiothrix* group, and some of their affines, as *Pteruthius*, and perhaps the *Accentorinæ*; also the true *Ampelinæ*, such as *Cochoa*; whilst, of foreign groups, we must add the *Pipridæ* and *Mniotiltidæ* of America, the *Pardaloti* and *Pachycephali* of the Australian region, and perhaps some others, as will be mentioned when I treat of the group in detail. I shall only remark here, that they are the most anomalous, as to colours, of the whole dentirostral group, many of them exhibiting great variety and beauty. They are very arboreal, and their feet

are generally stout, though the tarsi are comparatively short, enabling them to hop and clamber about the extreme twigs of trees, where they feed on insects, buds, and fruit.

The bill is generally stout, often somewhat conic, but very much varied, as in many other large groups.

Fam. LANIADÆ, Shrikes.

Bill strong, short, or of moderate length, notched or toothed at the tip; gape rather wide, with rictal bristles; tarsus short, strong, usually with large scutæ in front and on the toes.

Shrikes are divided into several sub-families, with well marked characteristics of structure and habits. Those adopted in the present work are as follow:—

1*st.*—*Lanianæ.*—True Shrikes, with the strongest bills. Seize their prey on the ground; and are chiefly from the Old World.

2*nd.*—*Malaconotinæ.*—Bush Shrikes, with longer beaks. Seize insects on leaves and branches, occasionally in the air. India, Africa, and perhaps Australia.

3*rd.*—*Dicrurinæ.*—Drongo Shrikes, with the bill long and somewhat depressed, long forked tails, and glossy black plumage. Seize their insect-prey in the air, or upon the ground, or on trees. Africa, India, to Australia.

4*th.*—*Artaminæ.*—Swallow Shrikes, with moderate or stout bills, barely hooked, long wings, and short tails. Hunt for insects in the air, like Swallows. From India, Madagascar, and Australia.

5*th.*—*Campephaginæ.*—Cuckoo Shrikes, with the bill rather wide at the base, very slightly hooked. Seek for insects on branches and leaves. Africa, India, and Australia.

Besides these sub-families, there are the *Thamnophilinæ* of America; and perhaps some of the larger *Tyranninæ* of the New World should rather be placed with the Shrikes, than with the Fly-catchers.

Gray has only two sub-families of Shrikes, *Laniinæ*, in which he distributes our first two sub-families, and *Thamnophilinæ;* the other Shrikes being placed under his *Ampelidæ.*

Sub-fam. LANIANÆ, True Shrikes.

Char.—Bill strong, deep, more or less abruptly hooked, and the tip strongly notched; wings moderate; tail moderate or long; tarsus rather short, stout; feet short, strong; lateral toes nearly equal; middle toe short; claws sharp.

The Shrikes are a well known group of birds, found all over the world, except in Australia and South America. They are of plain and sober colours, black, grey, rufous, and white, being the only shades found among them. They watch, in general, from a perch on a tree, and pounce on their insect-prey on the ground. Many of them kill small birds and mammals, such as mice and shrews; and some of them have the habit of impaling their victims on thorns. Their flight is direct, moderately rapid, with repeated strokes of the wings.

Gen. LANIUS, Lin. (in part).

Char.—Bill short, strongly hooked and toothed, much compressed; rictal bristles numerous, rather weak; wings moderate; 3rd and 4th quills about equal and longest; tail somewhat long, graduated; tarsus short; feet short, but strong.

Gray, in his List of Genera, put *L. excubitor* under the genus *Collurio*, and reserves *Lanius* for *L. cristatus*; but I do not think that there is enough difference to entitle them to different sub-generic rank.

256. **Lanius lahtora**, SYKES.

Collurio, apud SYKES, Cat. 50—GRAY and HARDW., Ill. Ind. Zool., 2, pl. 31—L. burra, do., pl. 32, f. 3—JERDON, Cat. 49—BLYTH, Cat. 868—HORSF., Cat. 211—*Dudiya latora, i. e.* 'Milky Shrike,' H.—*Sufeid latora* in N. W.—*Kach-kacha latora*, in Bengal—*Chinka bellinchi*, Tel., also *Pedda kiriti-gadu*, Tel.

THE INDIAN GREY SHRIKE.

Descr.—Pale blue-grey; a very narrow frontal streak, continued through the eyes to the nape; the wings and middle tail-feathers, black; a large band on the wings, formed by a broad band occupy-

ing two-thirds of all the primaries, and the outer webs and tips of the secondaries; the margins of the scapulars, the two external tail-feathers on each side, and the tips of the two following, white; also all the lower plumage.

Bill black; legs brown-black; irides hazel-brown.

Length $9\frac{1}{2}$ to 10 inches; wing $4\frac{1}{4}$; tail $4\frac{1}{2}$ to 5; bill at front $\frac{5}{8}$; tarsus $1\frac{1}{8}$; weight 2 oz.

The Indian Grey Shrike is very close to *L. excubitor* of Europe; but differs in having the forehead black, and in the white upon its secondary quills. It is spread throughout the greater part of India, but is not found in the damp province of Malabar, nor in Lower Bengal. I observe that it is stated to be also an inhabitant of the North-east of Africa.

It affects chiefly low, thin, and thorny jungle, or plains where a few low trees or bushes are sparingly sprinkled. It is not often found in cultivated ground, or near villages. It has the usual habits of the tribe, sitting on the top of some low tree, on the watch for a cricket, a locust, or for some young or sickly bird to come near. It flies low, near the ground, from one tree to another, and it has a harsh grating cry, but can also sing sweetly; and, it is said, imitates the song of other birds to bring them near. Mr. Philipps states that he has seen it capture small birds; and that, in the North-west, it is occasionally trained to do so. He also relates that it is sometimes picketed to the ground, closely attached to a Starling, and the neighbouring bushes, twigs, &c., being well smeared with bird-lime. All sorts of birds come to witness the supposed fight, and to separate the combatants, and many are captured by the limed branches.

I have seen the nest and eggs on several occasions, from February to May. The nest is rather large, deeply cup-shaped, made of twigs, roots, &c., and lined with hair or cotton, and the eggs, three to five in number, are dull greenish-white, with a few spots and blotches of greenish-brown and light reddish-brown. Burgess asserts that it migrates from the Deccan during the monsoon; but I saw it all the year round at Jalnah, as well as in other parts of the country.

257. **Lanius erythronotus**, VIGORS.

Collurio apud VIGORS, P. Z. S., 1831—GOULD, Cent. Him. Birds, pl. 12, f. 2.—BLYTH, Cat. 870—HORSF., Cat. 213 and 214—Coll. jounotus, HODGS.—JERDON, Cat. 50—L. caniceps, BLYTH, Cat. 871—*Mattiya latora*, H. *i. e.* 'Earthy Shrike' in the South; *Kajala latora*, H., in the North—*Yerra bellinchi*, Tel.

The RUFOUS-BACKED SHRIKE.

Descr. Head above, nape, and upper part of the back, pure ashy; narrow frontal streak, continued through the eyes to the end of the ear-coverts, black; scapulars, lower back, rump, and upper tail-coverts, ferruginous; wings black; edge of the wing, and a small spot near the base of the primaries, white; tail, with the four central feathers, black, the outer feathers reddish-cinereous, edged and tipped paler or whitish; beneath white, ferruginous on the flanks and under tail-coverts; bill and legs black; irides dark brown.

Length 10 inches; wing $3\frac{1}{2}$ to $\frac{3}{4}$; tail $4\frac{1}{2}$ to 5; tarsus $1\frac{1}{8}$.

It will be seen, from the synonyms quoted above, that I do not adopt Blyth's species *caniceps*, from Southern India, which appears to me to be founded on a rather pale and abraded specimen. The black frontal band appears to be slightly narrower, the grey of the head is paler, and spreads over more of the back, and over the eye-band; and on the forehead it is almost whitish, and the rufous color of the back is almost confined to the rump and upper tail-coverts. I have killed specimens somewhat similar to this, and others quite as rufous as Himalayan specimens, in the same part of the country, and we know that the amount of rufous varies much both in this and in *L. nigriceps;* whether dependent on age or otherwise, I cannot say. Horsfield, in his Catalogue, enumerates Sykes's specimen as belonging to *erythronotus*. In Hutton's notes on Kandahar, Blyth states that the specimens forwarded by Captain Hutton resemble *erythronotus* in size, but *caniceps* in colouring; and Adams, in his Birds of Cashmere, gives *L. caniceps* and not *erythronotus*.

This Rufous-backed Shrike is found throughout the greater part of India, being common on the Malabar coast and the

Neilgherries, more raré and only found in the better-wooded portions of the Carnatic and Central India; and extending to Sindh, the lower Himalayas, and part of Bengal, and Ceylon. It affects jungly places, and hedge-rows and bushes in cultivated spots near jungle. Mr. Philipps states that it is inferior in courage to *L. lahtora*, and never attacks living birds. Its call, says he, is a shrill single sound, generally repeated with one high and one low note, like *peek peek.* I have found its nest in low bushes on the Neilgherries, very similar to that of the last.

L. schach, L., (*bentet*, Horsf.) from Java and China, is very like this, but is larger, and with the frontal band wider.

258. **Lanius tephronotus,** Vigors.

Collurio, apud Vigors, P. Z. S., 1831—Blyth, Cat. 873—Horsf., Cat. 217—L. nipalensis, Hodgs.—*Bhadraya* of the hills of Nepal—*Bagaha tentha* in the plains.—*Sakrik-pho,* Lepch.—*Totem*, Bhot.

The Grey-backed Shrike.

Descr.—Head, nape, scapulars and back, dark ashy; the lower back, and upper tail-coverts, slightly rufescent; a very slender frontal band (not always apparent there) extending through the eyes to the middle of the neck, black; wings and tail dusky brown, the tips paler; neck in front, breast, and middle of the abdomen, white; the sides of the breast and flanks, and lower part of the abdomen and vent, ferruginous. The young (and perhaps the females) have the sides of the neck, breast and flanks, edged with dusky; the tail brownish, and the wings dusky, edged with rufescent.

Bill and legs black; irides brown.

Length 10 inches; wing 4; extent 13; tail $4\frac{5}{8}$; bill at front nearly $\frac{3}{4}$; tarsus $1\frac{1}{8}$.

The Grey-backed Shrike is found throughout Lower Bengal, thence extending to the Himalayas, from Nepal to Bootan, and eastwards to Assam and Arakan. It is unknown in the south of India, and in the Upper Provinces. Hodgson says it is common in the open country in Nepal, in groves and gardens, during winter, but resorts

to the woods in summer. This bird has a harsh voice, very like that of the Kestrel, and is perpetually vociferating from its perch. It is bold and daring in its manners, and is easily caught by any insect-bait. I found it common at Darjeeling in winter, and it appears to be much dreaded by all the small birds, who give their note of alarm, and hide themselves, as soon as one of these Shrikes comes in view. I have killed it also near the banks of the Ganges, beyond Colgong.

259. **Lanius nigriceps**, Franklin.

Collurio apud Franklin, P. Z. S., 1831—Blyth, Cat. 872—Horsf., Cat. 216—Jerdon, Cat. 51.—Jerdon, Ill. Ind. Orn., pl. 17—L. tricolor, Hodgson—L. antiguanus, Gmel.—*Sakrik-pho*, Lepch.

The Black-headed Shrike.

Descr.—Head above, nape, wings and tail, black; upper part of back ashy; lower back, scapulars, rump, and upper tail-coverts, rufous; beneath, the throat, breast, and middle of abdomen, white; sides of abdomen, vent, and lower tail-coverts, rufous.

Bill black; legs brown-black; irides deep brown.

Length 10 inches; wing $3\frac{5}{8}$; tail 5; bill at front $\frac{1}{2}$; tarsus $1\frac{1}{10}$.

This Black-headed Shrike is found from Nepal to Bootan, in the Himalayas, and from the foot of the hills through Purneah and Dinagepore, &c., to Calcutta and the Sunderbuns, extending eastwards into Assam, Arakan, and even to China and the Philippines. I have seen it in Goomsoor, but not further south; and from this it ranges inland into the northern part of Central India. I have also observed it along the banks of the Ganges, in Rajmahal, Colgong, and Dinagepore, and at Darjeeling, up to 3,000 ft. of elevation. It frequents alike open spaces in forests, and dense grass-jungle mixed with bushes. Like the others of its kind, it descends to the ground to pick up grasshoppers and various other insects. It was probably the nest of this, or of some other Shrike, that was brought to Tickell as the nest of the King-crow *(Dicrurus macrocercus)*. This is described as being large, hemispherical, placed near the top of a thick bush; and the eggs dull white, with scattered brown spots.

260. Lanius Hardwickii, Vigors.

Collurio apud Vigors, P. Z. S., 1831.—Gould, Cent. Him. Birds, pl. 12, f. 1—Blyth, Cat. 876—Horsf., Cat. 215—Sykes, Cat. 53—Jerdon, Cat 48—*Pachanak*, H.—*Chota-kilotora*, Bengal —*Chinna bellinchi*, Tel., *i. e.* small Shrike; sometimes called *Venne-dega*, Tel.,—*Kichang kuravi*, Tam.

THE BAY-BACKED SHRIKE.

Descr.—The whole forehead, with eye-stripe, continued to the nape, black; top of the head white; back of head, nape, and the lower part of the back, whitish-grey, paler and almost white on the upper tail-coverts; middle of the back and scapulars deep chesnut or bay; wings and tail black, the former with a wing-spot on the primaries, and the latter with the two outermost tail-feathers on each side and base, and tips of the others (except the four central) white; body beneath, white, tinged with fulvescent on the breast, and the sides of the abdomen dark ferruginous.

The female sometimes wants the black forehead and stripe over the eyes.

Bill and legs black; irides hazel-brown.

Length $7\frac{1}{2}$ to 8 inches; wing $3\frac{1}{4}$; tail 4; bill at front $\frac{7}{10}$; tarsus $\frac{3}{4}$.

This handsomely-plumaged little Shrike is found over all India, except on the Malabar coast on the west, and Lower Bengal in the North-east. It frequents low thorny jungle, but is also found in groves, gardens, hedge-rows, &c. It has the usual harsh cry of its tribe, but can also utter some very pleasing notes. I never found its nest myself, and it retires from the more open parts of the Deccan to breed. Theobald obtained the nest, which was a compact structure, placed in the fork of a thorny tree, made of fibres, silk, spiders' web, lichens, cocoons, &c., and lined inside with down. This was in May and June.

The next species have usually been placed under the genus *Enneoctonus*, Boie; but Mr. Blyth, whom I follow, considers them as true *Lanii*, differing from *L. collurio*, which is the type of *Enneoctonus*; and Gray, as noticed previously, puts them into *Lanius*, as restricted.

261. Lanius cristatus, LINNÆUS.

BLYTH, Cat. 874—HORSF., Cat. 218—EDWARDS, V., pl. 54—L. superciliosus, L., apud JERDON, 2nd Suppl., Cat. 51, bis—L. ferrugiceps, HODGS.—L. phœnicurus, PALLAS—*Batti gadu*, Tel.—vulgo *Batti-kiriti-gadu*, Tel.

THE BROWN SHRIKE.

Descr.—Above rufous-brown, with the head, tail, and the upper tail-coverts, more rufous; streak over the eye, sometimes faintly and narrowly extending over the forehead, white; throat white; the rest of the lower parts whitish, with a fulvous tinge; lores and ear-coverts, forming a broad band through the eye, dull brown-black. Females and young much edged with brown bands, and the eye-spot paler and brown.

Bill horny, dusky at the tip; legs leaden-brown; irides dark.

Length 8 inches; wing $3\frac{3}{8}$; tail $3\frac{1}{2}$.

The Brown Shrike is found in almost every part of the plains of India, during the cold weather, frequenting gardens, hedge-rows, groves of trees, and low jungle. It disappears from the south of India in the hot season and rains, and most of them do the same even in the north of India, but there a few couple stay and breed.

Blyth says "Its peculiarly harsh chattering affords the earliest intimation of the advent of the cold weather in Calcutta; but that a few are found near at all seasons." He also remarks, that it occasionally warbles very sweetly, towards the end of the cold season. The Bengal name, *Curcutia*, is applied on account of its ordinary harsh voice. Hamilton, in his manuscripts, remarks that it occasionally builds near Calcutta; but Tickell has, in this case, I think, as in others, been misled by his native collectors, for he evidently describes the nest and eggs of a Bulbul for those of this Shrike, *vide* J. A. S., XVII., 302.

A nearly allied race, or species, exists in Malayana, *L. superciliosus*, L., distinguished by its brighter rufous colour, and the very conspicuous white frontal band and eyebrow; and perhaps another race, *L. lucionensis*, L. (*crassirostris*, Kuhl, apud Bonaparte),

appears to be found in China and the Philippines, extending to the Andaman Islands, Ceylon, and Java. This race differs by its more prevalent ashy hue, and its somewhat deeper and stronger bill. Other allied species are *L. Schwaneri*, Bonap., from Borneo; and *L. bucephalus*, Tem., from Japan.

262. **Lanius arenarius**, Blyth.

J. A. S., XV., 304.

THE PALE-BROWN SHRIKE.

Descr.—This race differs from *cristatus* by its much paler hue, being light ashy-brown, barely tinged with rufous on the rump only; lores and superciliary streak, pale; ear-coverts dark above, pale beneath; wings pale brown; the primaries narrowly edged, and the coverts and secondaries broadly, with rufescent; the central tail-feathers brown; the rest pale rufous-brown; beneath white, smeared all over, but especially on the breast and flanks, with fawn or fulvescent; under tail-coverts white.

Length $7\frac{3}{4}$ inches; wing $3\frac{3}{4}$; tail $3\frac{1}{2}$.

This race has been found only in Sindh and the country between Sindh and Ferozepore; but it probably extends over other parts of Western and Central Asia.

A species allied to these, but smaller, with remarkably powerful bill, *L. tigrinus*, is common in Malayana; and a species somewhat like *Hardwickii*, *Lanius hypoleucos*, Blyth, is common in Pegu and the Tenasserim Provinces, being the only Shrike which I saw in Burmah; *L. cristatus*, however, being common in Arakan. Several other Shrikes are found in Europe, Northern Africa, and N. America. *L. collaris*, and *L. subcoronatus*, from South Africa, are black and white; as is *Corvinella cissoides*, a long-tailed Shrike from the same country. *Cracticus*, from Australia, perhaps belongs to this sub-family. The birds belonging to this genus have lengthened bills, but their habits are quite those of the true Shrikes.

Sub-fam. MALACONOTINÆ, Wood Shrikes.

Malaconotinæ in part, and *Prionopinæ*, Bonap.

Bill more lengthened and less compressed than in the true Shrikes; wings longer, and tail shorter; tarsus short; feet small.

This sub-family comprises a considerable number of birds belonging to the Old World, and perhaps to Australia, which differ from the true Shrikes in their more lengthened and wider bill; the tip is generally well hooked, and strongly toothed; the nostrils are protected by feathers; and the rictal bristles are numerous, though not remarkably strong. The wings are somewhat longer than in the true Shrikes, and the tail is shorter, and even, or emarginate, or very slightly rounded. The feet are generally more feeble, and are only intended for perching. The Indian members of the sub-family are very arboreal, more or less social, generally hunting in small flocks, and feeding on insects which they pick off the leaves and branches. They usually have a rather pleasing song whilst thus employed.

To this group belong the Indian *Tephrodornis* and its allies, and the African *Dryoscopus*, *Prionops*, and their affines; and perhaps, though in this I speak with doubt, the Australian *Colluricincli.*

Pr. Bonaparte includes, in his two sub-families noted above, the African Shrikes pertaining to *Prionops*, *Dryoscopus*, *Telephonus*, *Laniarius*, and *Malaconotus*, and the Asiatic *Tephrodornis*, also *Vanga* of Africa. He now classes *Colluricincla* with the *Pachycephalinæ*, through he formerly placed them among the Shrikes. If the true *Malaconoti* strictly belong to this group, and not to the *Campephaginæ*, they represent *Pericrocotus* of the *Campephaginæ*, by their bright colors. *Telephonus* appears a sort of link between the Bush Shrikes and the true Shrikes. *Dryoscopus* has the coloring of *Hemipus*; *Sigmodus*, *Eurycephalus*, and *Prionops*, have white heads, and at one time I was inclined, with Mr. Blyth, to class here *Gampsorhynchus*, and *Thamnocataphus*, the former of which has, when adult, a white head; but I am now led to look upon these forms as a *Laniane* development of the great *Crateropodine* series.

Gen. TEPHRODORNIS, Swainson.

Syn. *Keroula*, Gray: *Tenthaca*, Hodgson.

Char.—Bill lengthened, widish at the base, compressed, strong, moderately hooked at the tip, and notched; base of bill and nostrils partially covered with procumbent setaceous feathers; a few moderately strong rictal bristles; wings moderate or long, slightly

rounded; tail rather short, even, or slightly emarginate; tarsus and toes short; lateral toes unequal; outer toe the longest, slightly syndactyle.

This genus was placed by Swainson among the *Dicrurinæ*, but I think quite erroneously.

263. **Tephrodornis pelvica,** HODGSON.

Tenthaca apud HODGSON, Ind. Rev., 1, 447—BLYTH, Cat. 882 —HORSF., Cat. 224—*Ramnun-pho*, or *Rabnun-pho*, Lepch.

THE NEPAL WOOD-SHRIKE.

Descr.—Plumage above pale ashy-brown, somewhat cinereous about the head; the rump white; quills, tail, and upper tail-coverts, dark brown; a blackish streak through the eye, and the frontal plumes also black; beneath whitish, tinged with ashy-brown or reddish-ashy on the neck, breast, and flanks.

Bill dusky-blackish; legs plumbeous-brown; irides brownish-yellow.

Length $8\frac{3}{4}$ inches; extent $14\frac{1}{2}$; wing $4\frac{1}{2}$; tail $3\frac{1}{2}$; bill at front $\frac{3}{4}$; tarsus $\frac{8}{10}$.

This bird has been found in Nepal, Sikhim, Arakan, and Burmah. I procured it rarely at Darjeeling, where it is found from 1,500 to 4,000 feet. It wanders from tree to tree, picking insects off the leaves and branches, and has a somewhat agreeable mellow note. Hodgson says "It is much more common in the lower region of Nepal than in the central or northern regions. Food grylli, also mantides, crickets, grubs, and caterpillars. Takes its prey either on the wing, or foliage. Is shy, adhering to the forests, and has the unamiable voice of the typical *Lanii*."

264. **Tephodornis sylvicola,** JERDON.

Cat. 52—BLYTH, Cat. 881—*Phari Latora*, H., *i. e.*, Hill Shrike,

THE MALABAR WOOD-SHRIKE.

Descr.—Above slaty-cinereous; rump white; wings, tail, and some of the upper coverts, dusky-brown; a broad eye-streak from

the nostrils, through the eye, to beyond the ear-coverts, black; beneath white, reddish-cinereous on the neck, breast, and flanks.

Bill blackish; legs plumbeous; irides wax-yellow.

Length $8\frac{1}{2}$ inches; extent 14; wing $4\frac{1}{2}$; tail $3\frac{1}{4}$; bill at front $\frac{7}{10}$; tarsus $\frac{9}{10}$ nearly; weight $1\frac{1}{2}$ oz.

This species differs from the last in being smaller, in the purer and darker cinereous hue of the upper plumage, and in the white beneath; also in the more conspicuous and darker eye-streak.

This Wood Shrike is only found in the forests of the Malabar coast, from Cape Comorin up to N. L. 16°, and ascending the Neilgherry and other ranges up to 5,000 feet or so. It climbs and hops about the larger boughs of trees, picking insects of various kinds off the bark, and occasionally makes a swoop at one it has spied on a branch at a short distance. It is usually found in small flocks, keeping up a noisy and harsh chattering, but it has also a clear note.

265. Tephodornis pondiceriana, Gmel.

Muscicapa apud Gmelin—Blyth, Cat. 884—Horsf., Cat. 222—T. superciliosus, Swainson—Jerdon, Cat. 53—Keroula indica, Gray, Hardw, Ill. Ind. Zool., pl. 23, f. 1-2. Lanius muscicapoides, Franklin—Lan. griseus, Tickell—Tenthaea leucura, Hodgson—Muscicapa philippensis of India, Latham—Lanius sordidus, Lesson—*Keroula*, Hind., in the North—*Chudukka*, Beng.—*Ula pitta*, Tel., *i. e.* 'whistling bird,' sometimes *Vodam-bal-jitta*.

The Common Wood-Shrike.

Descr.—Above ashy-brownish; the feathers of the rump edged with white, and the upper tail-coverts deep brown; beneath, chin and throat white, the rest whitish, with a tinge of reddish grey; under tail-coverts white; superciliary streak reddish-white; wings and tail dusky-brown, the latter deeper brown, and with the two outer feathers on each side, white at the base and also at tip; a dark brown band from the nostrils through the eye to the ear-coverts.

Length $6\frac{1}{2}$ to 7 inches; wing $3\frac{1}{2}$; tail $2\frac{3}{4}$; extent 10 inches; bill at front $\frac{5}{8}$; tarsus $\frac{3}{4}$; weight 12 dwt.

Bill dusky-horny; legs plumbeous-brown; irides greenish-yellow.

This bird is found throughout the greater part of India, frequenting thin jungle, groves, gardens, and even hedge-rows. It is more abundant in the Carnatic than either on the Malabar coast or the bare table-land. It is common in Bengal and Upper Burmah, extending to the foot of the Himalayas, and also into Assam. It is found in small flocks, generally ranging from tree to tree, and most carefully hunting the branches and foliage for various insects, chiefly *Coleoptera* and *Orthoptera*.

It has a harsh cry at times; but, in general, has a pleasing mellow whistling note, whence its Telugu name; and it is said by Buch. Hamilton to be occasionally caged for its song. The nest has been brought to me in August at Nellore, chiefly made of roots and lined with hair; and the eggs, three in number, were greenish-white with large brown blotches.

266. **Tephrodornis grisola**, BLYTH.

J. A. S., XII., 180, bis—BLYTH, Cat. 886.—

THE ARAKAN WOOD-SHRIKE.

Descr.—Above brownish-ashy; beneath reddish-white; wings and tail dusky-brown.

Length $6\frac{1}{2}$ inches; wing $3\frac{1}{4}$; tail $2\frac{1}{2}$; bill at front $\frac{1}{2}$; tarsus $\frac{3}{4}$.

This species differs from the last in wanting the white eyebrow, in having no white on its tail-feathers, and in the ear-coverts not being dark.

It is a native of the Eastern side of the Bay of Bengal, from Arakan down to Malayana, and also the Andaman Isles and Java. It has been procured very rarely near Calcutta.

Tephrodornis gularis, Raffles, from Malacca and the isles, is very near *T. pelvica* and *sylvicola*, but it has lately been separated generically as *Tephrolanius*; and a species from Ceylon, *T. affinis*, has been described by Blyth, very like *T. ponticeriana*, but smaller, with proportionally smaller bill, and the eye-streak less prominent.

Gen. HEMIPUS, Hodgson.

Syn. *Cabanisia*, Bonap. (partly).

Char.—Much as in *Tephrodornis*, but the bill more flat, depressed and wider at the base; rictal bristles small; nostrils concealed; wings moderate, 3rd quill almost equal to 4th; tail narrow, graduated; legs and feet small.

I formerly classed this bird among the Flycatchers, from its small size and depressed bill. Taking, however, all its characters and its social habits into consideration, I think that it is more appropriately placed here.

This genus appears to grade into some of the *Pericrocoti* of the division to which *erythropygia* belongs, and also perhaps into the true Flycatchers. Horsfield and Gray still place it among the Flycatchers. Gray gives *Myiolestes* of Cabanis as synonymous with *Cabanisia;* but Bonaparte, in his Conspectus, arranges under that genus some of the Oceanic *Napotheræ*.

267. **Hemipus picatus**, Sykes.

Muscicapa apud Sykes, Cat. 44—Blyth, Cat. 890 and 891—Horsf., Cat. 173—M. hirundinacea apud Jerdon, Cat. 155—M. tyrannides, Tickell—M. capitalis, McLell.—H. picæcolor, Hodgson—*Viyum-pho*, Lepch.

The Little Pied-Shrike.

Descr.—Male—Above black, glossed, less so on the back and scapulars, with a white nuchal collar and white rump; band on the wings white; tail with the lateral feathers tipped with white, more broadly so on the outermost feather; beneath white, tinged with reddish-ashy, purer white on the throat, vent, and under tail-coverts.

The female differs in having the upper parts dull sooty-brown-black.

Bill and legs black; irides sienna-yellow. Length $5\frac{1}{2}$ inches; wing $2\frac{0}{10}$; tail $2\frac{1}{2}$; bill at front $\frac{4}{10}$; tarsus $\frac{1}{2}$.

Mr. Blyth formerly considered the bird from Southern India as distinct from the Himalayan one, but now concurs with Horsfield

in uniting them. Himalayan birds certainly have the back generally of a duller brown than Southern specimens, which also appear to be a trifle larger.

The Little Pied Shrike is found from the Himalayas to the Neilgherries, in the forests of Central India and all along the crest of the Western Ghâts. It is generally seen in small parties of five or six, wandering about from tree to tree, every now and then darting on insects in the air. It has a pleasing little song, not often heard however. On the Neilgherries I found it up to 7,500 feet. At Darjeeling rarely higher than 5,000 feet or so. I obtained its nest once at Darjeeling, made of roots and grasses, with three greenish-white eggs, having a few rusty-red spots.

Hemipus obscurus, Horsf. (*hirundinaceus* of Temm.), from Java, has a much stronger and more Shrike-like bill, and was separated from *Tephrodornis* as *Cabanisia*, Bonap.; but our species he retains as *Hemipus*, and keeps it among the Flycatchers, as Horsfield and Gray do.

Sub.-fam. CAMPEPHAGINÆ, Cuckoo-Shrikes.

Char.—Bill of moderate length, or rather short, rather deep vertically, broadish at base; culmen arched or curved; rictal bristles few, feeble; nostrils basal, in a fossa, partially covered by short plumules; wings of moderate length; 3rd and 4th, or 4th and 5th, quills sub-equal and longest; tail rather long, rounded, or graduated; feathers of the back and rump often rigid; tarsus short; feet weak or moderate. Peculiar to the Old World.

Gray, indeed, inserts one or two American genera in this family; but these apparently are true *Ampelidæ*.

The birds of this family have been placed by Gray next to the *Dicrurinæ* in his *Ampelidæ*, and Blyth places his *Graucalidæ* (and the genus *Pericrocotus* following it) next to the *Ampelidæ*. Van Hoeven places them in his *Muscicapidæ*, between some true Flycatchers and some undoubted *Ampelidæ*. Swainson and Horsfield class them as a family of the Shrikes, and I without hesitation follow them. Their almost entirely insectivorous diet, strong bill, and general structure, concur in placing them here; but as a somewhat aberrant family, and some of them have undoubted affinities for the

Ampelideous group, as shown in one genus by its fruit-eating propensities, and in another by its gay colors.

Most of them have their plumage of grey of various shades, or blackish; one group is gaily colored with glossy black and fine red of various shades. They frequent woods and gardens, living in small flocks in general, and feeding entirely in trees on various insects, caterpillars, &c. The majority of them are inhabitants of India and Malayana with Australia; a few being from Africa.

They perhaps grade into the *Dicrurinæ* by means of such birds as *Pteropodocys*, a fork-tailed *Campephaga* from Australia; and *Dicrurus cineraceus* approaches in its colors to many of this sub-family. *Ceblepyris tricolor* of Temminck is said by Bonaparte to the *Artaminæ*.

Gen. VOLVOCIVORA, Hodgson.

Syn. *Ceblepyris* of Cuvier, partly; *Campephaga* and *Lalage* apud auct.

Char.—Bill rather short, broadish at base, compressed at tip, where bent down and notched; culmen scarcely keeled; rictal bristles almost wanting; nostrils basal, oval, partly concealed by tufts; wings rather long; 3rd and 4th quills equal and longest; tail moderate or long, rounded; upper tail-coverts long; tarsus short; feet short, outer toe slightly longer than the inner; claws small, slightly curved.

This genus is now adopted by Gray and Bonaparte for the Indian species, that have been variously classed as *Ceblepyris*, *Lalage*, and *Campephaga*.

268. **Volvocivora Sykesii**, STRICKLAND.

Campaphaga Sykesii, GRAY—BLYTH, Cat. 1153—Ceblepyris canus and C. fimbriatus apud SYKES, Nos. 56 and 57—JERDON, Cat. 61—HORSF. Cat. 234—*Jungli kasya*, H.—*Chinna Akurayi*, Tel., *i. e.* Lesser file-bird.

THE BLACK-HEADED CUCKOO-SHRIKE.

Descr.—Male.—Head, neck and breast, deep black; whole upper plumage pale grey; tail black, the outer feathers broadly tipped

with white; lower breast and abdomen pale grey, passing gradually to white on the lower abdomen and lower tail-coverts.

The female and the young have the head grey like the back, the throat, and entire under parts, whitish, with dusky cross-rays, and the rump more or less distinctly rayed. Blyth, however, states that the sexes are alike, and that when adult both have the head and neck black.

Irides dark red-brown; bill and feet black; length about 7½ inches; wing 4; tail 3; tarsus $\frac{8}{10}$; bill at front ½.

Horsfield places this bird as a *Lalage;* but that genus is now retained for the pied species, of which *L. orientalis* of Malayana is the type, and which is chiefly devoloped in Australia and the neighbouring isles. Moreover, the species of *Lalage* have the rump feathers soft and not spinous.

This bird is found throughout the whole of India, but is neither common nor abundant. It is most plentiful in wooded countries, where there are considerable tracts of low jungle, not being found in the forests of Southern India. It also enters gardens, orchards, and is common in hedge-rows, and among the fine avenues of old trees we meet with in Southern India. It is also found about Calcutta. It hunts usually in small parties, occasionally singly or in pairs, flying from tree to tree, and slowly and carefully examining the foliage, prying searchingly all around and under the leaves to discover a suitable morsel. It continues its search, hopping and flying from branch to branch, till the tree has been well inspected, when the flock flies off together to another tree. Its favorite food is caterpillars and other soft insects. It is usually a silent bird, but has a harsh call, and on one occasion, in June, I heard the male giving out a clear whistling call, as he was flying from tree to tree.

269. **Volvocivora melaschistos,** Hodgson.

Ind. Rev., 1—p. 328—Cebl. lugubris, Sundevall—C. fimbriata apud Blyth, Cat. 1151—Horsf., Cat. 236—Lanius silens, Tickell.—*Kabasi*, Beng.

THE DARK-GREY CUCKOO-SHRIKE.

Descr.—Plumage iron-grey, darker and almost black on the quills and tail; the latter tipped white on all but the central feathers; paler grey beneath. Young birds are dusky-grey above, paler beneath, with dark bands, albescent on the under tail-coverts.

Bill and legs black; eyes hazel-brown. Length $9\frac{1}{2}$ to 10 inches; extent 15; wing ; tail $5\frac{1}{4}$; bill at front $\frac{5}{8}$; tarsus $\frac{7}{8}$.

This bird has usually been considered to be the same as the *C. fimbriata* of Temminck, from Java; but it appears to be a much larger bird, and to differ in other respects.

The Dark-grey Cuckoo-shrike is found generally throughout the more wooded parts of India, but is rare in the South. I never saw it from the West coast, nor the Eastern Ghats, near Nellore; but it has been procured in Goomsoor, and I obtained specimens in Central India, in Bustar and in Bundelkund. It is not rare at Calcutta, and extends to the Himalayas, ranging up to at least 7,000 feet, during the summer. I found it not rare at Darjeeling, where it breeds, as I procured some quite recently flown young ones. It is solitary, or in small parties, frequenting high trees, the foliage of which it diligently searches for various insects. I have found caterpillars chiefly, also other soft insects, as well as bugs and beetles, but never berries, which Hodgson says it frequently eats. He also asserts that it freely descends to the ground to feed, which I certainly have never witnessed. It is a silent bird in general, but Hutton says it has a plaintive note, which it repeatedly utters while searching through a tree for insects. The same naturalist found its nest in the fork of a tree high up; it was small, shallow, made of grey lichens, roots, &c., and plastered over with cobwebs. The eggs were two, dull grey-green, with close streaks of a dusky brown.

Other species from the East are *C. avensis*, Blyth, from Burmah; and *C. fimbriatus*, T., from Java and Malacca, with which I think Hay's *C. culminatus* is probably identical. *Ceblepyris* and *Campephaga* are both retained by Gray for African types; but Bonaparte restricts *Campephaga* to certain oceanic birds.

Gen. GRAUCALUS, Cuvier.

Char.—Bill strong, deep, of moderate length, wide at the base, culmen tolerably curved and hooked, slightly toothed; a few weak rictal bristles; wings rather long, pointed; tail moderate, slightly rounded, or nearly even, with the two outer feathers shorter; tarsus and toes moderate; claws well curved, of rather large size.

270. **Graucalus Macei,** LESSON.

JERD., 2nd Suppl., Cat. 60—BLYTH, Cat. 1146—HORSF., Cat. 231—Graucalus papuensis apud SYKES, No. 55—and JERDON, Cat. 60—G. nipalensis, HODGS.—*Kasya,* Hind.—*Kabasi,* Beng.—*Pedda Akurai,* Tel., *i. e.* 'large file-bird.'—*Talling-pho,* Lepch.

THE LARGE CUCKOO-SHRIKE.

Descr.—Whole upper plumage light plumbeous-grey, paling on the rump and upper tail-coverts; tail with the two central feathers grey, the rest dusky black, the two outer ones on each side tipped white, and the outermost also edged with white; beneath, neck, and breast, light grey, slightly tinged with reddish-ash on the breast; abdomen greyish-white, with numerous narrow cross-stripes, white on the lower abdomen and under tail-coverts.

Irides rich lake; bill blackish; legs plumbeous.

Length 12 inches; wing $6\frac{1}{2}$; tail 5; tarsus 1; bill at front $\frac{7}{8}$.

This species is found over all India, from the Himalayas to the extreme South, wherever there is sufficiency of wood. It is not found in the dense forests, but in thin forest-jungle, gardens, orchards, avenues, single trees, or even in thick hedges, sometimes singly or in pairs, or in small families. Its favorite food is insects, chiefly caterpillars, mantides, locusts, and other soft insects, which it searches for among the foliage of large trees; but it also eats fruit, especially the fig of the banian. I never saw it feed on the ground, as Hodgson says it does sometimes. It is rather a shy and wary bird, flying before you from tree to tree, uttering, as it alights, two or three rather sweet and mellow notes; but it has also a very harsh rattling scream, which Hodgson compares to that of the Kingfisher, and which the Telingas compare to the rasping of a file. It flies in an easy undulating manner, with but few flap-

pings of its wings. Its flesh is eaten and esteemed by some of the natives. I once obtained its nest and eggs. The nest was built in a lofty Casuarina tree, close to my house at Tellicherry; it was composed of small twigs and roots merely, of moderate size, and rather deeply cup-shaped; and contained three eggs, of a greenish-fawn colour with large blotches of purplish-brown.

Several other species of *Grauculus* are found in Malayana and Australia, among others are *G. Papuensis*, from New Guinea, long considered the same as our bird; *G. Javensis* from Java; *G. fasciatus* from Sumatra; and there is one in Ceylon like ours, but a rather smaller race, which has been named *G. pusillus* by Blyth.

Gen. PERICROCOTUS, Boie.

Syn.—Phœnicornis, Swainson: *Acis*, Lesson.

Char.—Bill shorter than the head, moderately broad at base, rather high; culmen slightly curved; nostrils partially concealed by the frontal plumes; rictal bristles few and feeble; wings moderate, 4th and 5th quills sub-equal and longest; tail long, with the three outer feathers on each side graduated, and the four middle ones nearly equal; tarsi and feet short, rather feeble; claws well curved.

This genus is placed next to *Campephaga* by most authors. Horsfield, however, places it among the Flycatchers. Although its gay colours would appear to separate it from the quakerish *Campephagæ*, yet some of these approach it in brightness of plumage, *e. g. Cercotrichas phœniceus*, and some of the present genus, as *P. roseus*, are grey with only a faint tinge of the rich color of the others of the tribe, and one from China has no trace of red at all. The Red Shrikes, or *Minivets* (as Mr. Blyth has called them in the Museum Asiatic Society), form a group of species very similar to each other in the mode of coloration, the males being generally black and red, and the females grey and yellow, but the tints differing according to the species. They are all inhabitants of India and Malayana, live in small parties, are active and lively, feeding on insects, and usually keeping up a continual chirping.

271. Pericrocotus speciosus, LATHAM.

Turdus apud LATHAM—BLYTH, Cat. 1158—HORSF., Cat. 186—Phænicornis princeps, GOULD, Cent. pl. 7—JERDON, Cat. 63—*Sahili*, H.—*Shah sahi kapi*, Bengal, or *Sath sati kapi*, according to Blyth.

THE LARGE MINIVET.

Descr.—Male—Head, whole neck, upper back, wings, and two central tail-feathers, shining blue-black; lower back, broad band on the wing, formed by a large spot on all of the quills and some of the lower-coverts also; some spots on the secondaries, the lateral tail-feathers, and beneath from the breast, rich vermillion-red.

The female has the head, neck, upper back, and central tail-feathers, light ashy grey, with a tinge of green; forehead, rump, and upper tail-coverts, greenish-yellow; the quills dusky black, with a deep yellow spot; tail with the four central feathers dusky, the outer pair tipped yellow; the whole of the others deep yellow, with some blackish at the base crossing each feather obliquely; the whole of the lower parts deep king's-yellow.

The two central tail-feathers have sometimes the outer web red for a great part of their length; and the yellow on the forehead of the young male has an orange tinge: otherwise it resembles the adult female.

Length 9 inches; extent $12\frac{1}{2}$; wing $4\frac{1}{4}$; tail $4\frac{1}{4}$; bill at front $\frac{1}{2}$ inch; tarsus $\frac{9}{10}$.

Bill and legs black; irides deep brown; the bill large and strong.

This splendidly-coloured bird extends from the Himalayas to Central India and Goomsoor, where I obtained it, but it does not appear to go further south. It is also found about Calcutta, and extends to Assam, Burmah, and Malayana; and it has been received from the Andaman Islands. It is not uncommon near Darjeeling, generally at about 3,000 to 4,000 feet of elevation. Like the rest of the tribe it goes in small parties, hopping and flying briskly about the branches, picking insects off the leaves and flowers. On one occasion only I saw it descend to the ground. It has a lively, constantly repeated, rather mellow call.

Mr. Blyth gives the Bengal name, which signifies 'the beloved of seven damsels,' generally applied to *P. peregrinus.*

272. **Pericrocotus flammeus**, FORSTER.

Muscicapa apud FORSTER—BLYTH, Cat. 1159—HORSF., Cat. 185—Phæn. flammeus, SWAINS., Zool. Ill. 52—and JERDON, Ill. Ind. Orn., pl. 11, m. and f.—SYKES, Cat. 38—*Phari Balal-Chasm*, H.—*Suli Sangam* (the male), and *Arsan buradi* (the female), of the Halapyks.

THE ORANGE MINIVET.

Descr.—Male, with the whole head and neck, upper back, scapulars, and wings, glossy blue-black; wings with a broad orange-red band, formed by all the quills having the central portion red, and the edges of the lesser wing-coverts also; tail with the two central feathers black, the next pair black, tipped red, and all the others blackish at the base, and orange-red for nearly half their terminal length.

The female has the head, neck, back, and wing-coverts, ashy; the forehead narrowly tinged with yellow; the lower back, rump, and upper tail-coverts, greenish-yellow; the quills and tail dusky black, the former with a yellow wing-spot, and the latter with the lateral tail-feathers yellow.

Bill black; legs brown-black; irides dark brown. Length $8\frac{1}{4}$ inches; wing $3\frac{8}{10}$; tail 4; bill at front $\frac{11}{20}$; tarsus $\frac{5}{8}$.

This species appears confined to the jungles of the South-west of India and Ceylon. I have seen no specimens from any other locality. Mr. Blyth gives Assam with doubt, and Dr. Horsfield had only a drawing from McLelland; so it is most propably an allied species. It extends from Travancore to the latitude of Bombay, and is found in all the lofty jungles, from near the level of the sea to 5,000 feet on the Neilgherry slopes. It is perhaps most abundant at moderate elevations. It is tolerably common through all the forests of Malabar, and from its bright and showy colors, often attracts the notice of the traveller. It keeps generally near the tops of high trees, usually in flocks of four or five; the sexes often apart from each other, all frisking about, picking insects off a

branch or leaf, or occasionally catching one in the air. The males keep up a continuing whistling call, which, as Colonel Sykes represents, is *wheet-wheet-wheet.*

273. **Pericrocotus brevirostris,** VIGORS.

Muscipeta apud VIGORS.—BLYTH, Cat. 1160—HORSF., Cat. 183—GOULD, Cent. H. B., pl. 8—JERDON, Cat. 64—Ph. affinis, MCLELL. (the female)—P. miniatus apud SWAINSON.

THE SHORT-BILLED MINIVET.

Descr.—Male—Head, neck, nape, upper back, wings, and middle tail-feathers, shining blue-black; body beneath, lower back, rump, upper tail-coverts, wing-spot, and tips of some of the coverts, and the lateral tail-feathers, fine deep crimson, the latter black at their bases. The female has grey head and back; forehead tinged with yellow; beneath, spots on wings, rump, and lateral tail-feathers, yellow; wings and tail dusky; the pair next the middle feathers slightly edged with yellow.

Bill and legs black; irides dark brown.

Length $7\frac{1}{2}$ to 8 inches; extent 11; wing $3\frac{1}{2}$; tail nearly 4; bill at front barely $\frac{3}{8}$; tarsus not quite $\frac{5}{8}$.

The Short-billed Minivet is found throughout the Himalayas up to 8,000 feet of elevation during the summer, migrating in the cold weather to the plains of India, and visiting Lower Bengal and Central India, not however extending its migrations far south. I have killed it in Goomsoor, N. Lat. 20, and also near Saugor. It extends into Assam and Arakan. It is very common at Darjeeling from April to October, frequenting lofty trees in small parties, constantly on the move, and engaged in picking various insects and keeping up a continued twitter. At times you see a lot of females only, together. Coleoptera appear to be their chief food. A nest and eggs were brought to me at Darjeeling, said to be of this bird, but I am not quite certain about this. The nest was tolerably neatly made, with roots, fibres, and moss, and contained three eggs of a dead white colour, with a few small brick-red spots. Buch. Hamilton says that it always languishes and dies in confinement.

To this group belong several other closely allied species, *viz.* *P. igneus*, Blyth (*minutus*, Strickland), from Malacca; *P. xanthogáster*, Raffles, from Sumatra; and *P. miniata*, T., from Java; perhaps, also, *P. elegans*, McLelland, from Assam and Upper Burmah.

The next species belongs to another section having the plumage above more ashy than black.

274. Pericrocotus solaris, Blyth.

J. A. S., XV.—Blyth, Cat. 1162—P. affinis, McLelland (the female)—Gould, Birds of Asia, pl.

The Yellow-throated Minivet.

Descr.—Male, fuliginous-ashy above, verging to black on the wings, and quite black on the tail; rump, wing-spot, greater portion of three outer tail-feathers, and the under parts, bright reddish flame-color; throat orange-yellow; ear-coverts pale grey.

Female,—Head, dark ashy-black, tinged olive-green beneath, wingspots, rump, and lateral tail-feathers, pale yellow; throat white.

Bill black; irides brown: legs brown-black.

Length $7\frac{1}{2}$ inches; wing $3\frac{3}{8}$; tail nearly 4; extent 10; bill at front not 3; tarsus 4; bill short and broad.

This well marked and pretty species has only as yet been found on the South-east Himalayas, as in Sikhim. I procured it at Darjeeling, and found it at heights varying from 2,000 to 5,000 ft. In its habits it resembles the others.

275. Pericrocotus roseus, Vieillot.

Muscicapa apud Vieillot—Blyth, Cat. 1163—Horsf., Cat. 182—Jerdon, Cat. 64 (in part), and 2nd Suppl., Cat. 65, bis.—P. sordidus, Hodgson.

The Rosy Minivet.

Descr.—Male—Head and neck ashy-grey; back reddish-cinereous, tinged with rosy on the rump; wings and tail dusky, the former with a rosy-scarlet wing-spot; the pair of feathers next the central tail-feathers edged rosy, and all the laterals rosy, with a dusky base; beneath, the chin whitish, tinged rosy; the rest of the under parts rosy-red, mixed with white, and deepest on the flanks.

Bill dusky; irides brown; legs brown. The female is ashy above, tinged with green on the back and rump; wings and tail dusky, with the wing-spot and lateral tail-feathers, yellow; beneath the chin and throat white, the rest of the lower parts pale whitish-yellow.

Length $7\frac{3}{4}$ inches; wing $3\frac{3}{8}$; tail $3\frac{1}{2}$; bill at front $\frac{7}{16}$; tarsus $\frac{1}{2}$.

This species is spread through the wooded parts of India; it is not uncommon in Lower Bengal, as about Calcutta, spreading into Arakan. I procured it in Goomsoor, where I mistook it for a young *P. brevirostris* (V. Cat., No. 64); and I obtained it from various parts of Malabar. Lord A. Hay informed me that he had seen it most abundant on the hills dividing Tinnivelly from Travancore; and collections from this latter country always include it. Still it cannot be called common in the South of India. I know nothing particular in its habits.

P. cinereus, from China and the Philippines, wants the red altogether, and is quite a link between the rich-coloured species and the plain-coloured *Campephaginæ*; and *P. modestus*, Boie, apud Bonaparte, appears to be nearly allied.

276. Pericrocotus peregrinus, Lin.

Parus apud Linnæus.—Sykes, Cat. 39—Blyth, Cat. 1164—Horsf., Cat. 181—Jerdon, Cat. 66—Gould, Cent. H. B. pl. 9—*Bulal chasm*, H., also *Sath-sayili*, and *Chota sath saki kapi*, in Bengal—*Kunkum-pu-jitta*, Tel.

The Small Minivet.

Descr.—Male—Head, nape, and back, ashy; lores, chin, throat, and ears, blackish; wings and tail dusky-black, the former with an orange stripe formed by a central band on all the primaries (except the first three), and the secondaries orange on the outer, yellow on the inner web; tail, with the four outer feathers on each side, widely tipped with orange; breast, upper part of abdomen, flanks, and rump, rich scarlet or aurora-red, fading to yellow on the lower abdomen and under tail-coverts, and whitish on the vent.

The female differs in having the eye-streak, sides of forehead, chin, throat, and lower parts, whitish, tinged with yellow on the breast,

abdomen, flanks, and under tail-coverts; the wings and tail are dingier black, and the wing-spot is yellow; the under tail-coverts of the wing are yellow in both sexes; tail as in the male, but the colours are not quite so bright.

Bill and legs black; irides brown. Length $6\frac{4}{10}$ inches; wing $2\frac{7}{10}$; extent $8\frac{1}{2}$; tail 3; bill at front $\frac{3}{10}$; tarsus $\frac{9}{10}$.

This pretty and lively little bird is spread throughout the whole of India, extending to the Andaman Islands, and Burmah; frequenting alike jungles, woods, orchards, gardens, avenues, and thick hedge-rows; most abundant of course in the more wooded countries. It is an active, restless little creature, ever engaged in diligently examining the extreme branches of trees, gleaning among the foliage, and hanging from the slender twigs like a Titmouse. It feeds on various insects, as small cicadæ, beetles, larvæ, &c. It is always in flocks, at times six or seven females may be seen with only one male; hence the Hindustani name *Sath sayili*; and at this same season the males usually associate in flocks by themselves, though now and then a single female may be seen with them.

P. flagrans, Boie, apud Bonaparte, is said to be very like *P. peregrinus*. It is from Sumatra and Borneo.

The next bird belongs to a slightly differing section of the genus, with more white, and the female is coloured like a *Hemipus*, to which I think it exhibits some affinities; and I first described it as a Flycatcher: the bill is more depressed than in typical *Pericrocotus*.

277. **Pericrocotus erythropygius**, JERDON.

Muscicapa apud JERDON, Cat. 156—BLYTH, Cat. 1165—figured in JARDINE'S Contributions to Ornithology.

THE WHITE-BELLIED MINIVET.

Descr.—Male, plumage above (except rump), cheeks and chin, of a glossy blue-black; beneath, longitudinal stripe on wings, outer edges and tips of the lateral tail-feathers, white; breast and rump of a fine orange or aurora-red, darkest on the rump.

The female has the parts that are black in the male, smoky ash-color (except the tail which is deep black), the forehead whitish; rump and beneath white, tinged with ashy on the breast.

Bill and legs black; irides brownish yellow. Length about $6\frac{1}{2}$ inches; wing $2\frac{7}{10}$; tail $3\frac{3}{10}$; bill at front $\frac{3}{10}$; tarsus $\frac{1}{2}$ inch.

I have found this Minivet extensively spread throughout India, but everywhere rare. I first procured it at Ajunteh, near Jalna; I afterwards saw it near Hydrabad; again near Segoor at the foot of the Neilgherries, and since in Bundelkund. Latham, too, describes it as the 'Cawnpore Flycatcher,' so that it probably extends into the North-western Provinces, through the jungles of Gwalior; and since the above was written, Colonel Tytler informs me that it is common about Delhi. It frequents low and bushy jungles, also thin tree jungle, groves, gardens, and hedge-rows, lives in small flocks, and feeds on various small insects.

I have lately discovered a second species of this particular sub-group in Upper Burmah, very similar, but the male with a white forehead, *P. albifrons*, nobis.

It appears to me, also, that some of the Oceanic Flycatchers, classed under *Monacha* and *Drymophila*, approach very closely to some of the *Pericrocoti*, and perhaps should be placed in this sub-family. *Monarcha trivirgata* has much the aspect and even the colouring of *P. peregrinus*.

Sub-fam. DICRURINÆ, Drongo Shrikes.

Bill rather large, wide at the base, thick, more or less curved and keeled at the culmen, and notched at the tip; numerous moderately strong rictal bristles; nostrils basal, rounded, concealed by short plumes; wings lengthened; 4th and 5th quills usually the longest; legs short; feet small; tail usually long, forked; the outer feathers occasionally much lengthened, of ten feathers only.

The family of Drongo Shrikes comprises a small number of birds found in Africa, India, and Malayana, and extending in small numbers to Australia and the neighbouring islands. They have almost always black plumage, and longish forked tails of only ten feathers, being one of the very few groups of the singing birds in which these are fewer than the normal number, twelve. The bill varies much, being short and depressed in some, lengthened and curved in others. They are birds capable of strong, rapid, and vigorous, but not of sustained, flight; and they feed almost entirely

on insects, which they capture on the wing, or on the ground, or occasionally on leaves or flowers; their legs are short, and feet fitted only for grasping. Some live in the open country, in gardens and fields, others occur only in the forests; and they are found from the level of the sea to 8,000 ft. and upwards. There are a most characteristic feature of Indian ornithology; for, go where you will in India, you are sure to see one or more of the genus. They build a rather loosely constructed nest, and lay three or four eggs, usually white, with a reddish tinge, and marked with spots and blotches of various shades of red or purple. They moult after breeding in July, August, and September.

The few species known to the older authors were classed under *Lanius* and *Corvus*. Vieillot named them *Dicrurus*, and Cuvier *Edolius*. Of late they have been sub-divided, and with good reason, into several genera. Gray classes this sub-family among his *Ampelidæ*; in my opinion a very erroneous view, whether you regard the structure of the birds, or their habits, which are wholly insectivorous, whilst in the *Ampelidæ* the food is almost universally mixed, insects and fruits, the latter perhaps prevailing. Mr. Blyth places his fam. *Dicruridæ* following the *Artamidæ*, and next the *Tchitreadæ* (part of our *Muscicapidæ*). Horsfield classes them as a sub-family of the *Laniadæ*, in which I fully agree with him. The Drongo Shrikes appear to grade, on the one side, into the *Campephaginæ*, and on the other, perhaps, into the sub-fam. *Tchitreinæ* of the Flycatchers, through *Melanornis* of Gray, (*Melasoma*, Swainson,) one species of which is named *M. edolioides*.

Gen. DICRURUS, Vieillot.

Syn. *Buchanga*, Hodgson.

Char.—Bill moderate or rather long, stout, depressed at the base, moderately hooked, and the culmen more or less keeled, and distinctly notched at the tip; nostrils small, partially covered by short feathers and bristles; rictal bristles strong; wings lengthened; 1st quill short, 2nd shorter than the 6th; tail long, deeply forked; tarsus moderate, strongly scaled in front; outer toe slightly the longest; claws sharp.

The King-crows, as they are termed in India, are the best known birds of this family, and the most abundant in species, and, as in all typical groups, very closely resembling each other. Four species are found within our limits, and several others in the Malayan provinces and islands. The genus extends to the African continent, but slightly differing in form.

278. Dicrurus macrocercus, Vieillot.

Blyth, Cat. 1219—Horsf., Cat. 193—D. indicus, Hodgs., As. Res. XVIII., with figure—Buchanga albirictus, Hodgs.—D. balicassius, Latham, apud Sykes, Cat. 47—and Jerdon, Cat. 55—*Kolsa*, Hind., in the South, also *Bojanga* or *Buchanga*—*Finga*, Beng.—*Japal kalchit* in the Punjab—*Kunich*, and *Kalkolachi* in Sindh—*Thampal*, in the N. W. P.—Sometimes *Kotwal* in the Deccan—*Yeti-inta*, Tel., also *Bara-dwa-jam*; also popularly *Passala-poli-gadu*, Tel., *i. e.* quasi 'Cattle tom-bird'—*Kurri kurrumah*, Tam.—'*King-crow*' of Europeans in India.

The Common Drongo-Shrike.

Descr.—Glossy black, with a small white spot at the gape, somewhat duller black on the quills and tail, which are brownish-black beneath. Young with whitish lunules on the abdominal plumage.

Length 12 inches; extent 16; wing 5¾; tail 6¼; bill at front ⅞; tarsus $\frac{9}{10}$; weight 1½ oz.; the 4th quill is longest, and the 3rd and 5th are nearly equal. The bill is moderately keeled and strong.

This Drongo Shrike is found throughout the whole of India and Ceylon,* extending through Assam and Burmah into China, and is to be met with in every part of the country, except in dense and lofty jungle. It perches generally on some bare branch, whence it can have a good look-out, or the top of a house or post or telegraph-wire, frequently also on low bushes, hedges, walls or ant-hills; and very generally on the backs of cattle, sheep, or goats, hence one of its popular Telugu names.

It feeds chiefly on grasshoppers and crickets, which, as Sundeval remarks, appears to be the chief insect food for birds in India;

* The Ceylon race is, however, smaller; *D. minor* of Blyth.

also now and then on wasps or bees, hence the Bengal name; on dragon-flies, and occasionally moths or butterflies. It generally seizes its insect prey on the ground, or whips one off a stalk of grain, frequently catching one in the air; now and then, when the grasshopper, having flown off, alights in a thick tuft of grass, the King-crow hovers for a few seconds over the spot like a Kestrel. When it has seized an insect, it generally, but not always, returns to the same perch. On an evening, just about sunset, it may often be observed seated on the top of a tree, taking direct upward flights, and catching some small insects that take wing at that time. Like most other birds, when a flight of winged termites takes place, it assembles in numbers to partake of the feast.

The King-crow obtains his familiar name in this country from its habit of pursuing Crows and also Hawks and Kites, which it does habitually; and at the breeding season, especially when the female is incubating, with increased vigilance and vigour. If a Crow or Kite approach the tree in which their nest is placed, the bold little Drongo flies at them with great speed and determination, and drives them off to a great distance; but although it makes a great show of striking them, I must say that I have very rarely seen it do so, and certainly I have never seen it fix on the back of a Hawk with claws and beak for some seconds, as Mr. Philipps asserts that he has seen. Occasionally, others will join the original assailant, and assist in driving off their common enemy. From this habit the bird has received the name of *Kotwal* in some parts of the country. Blyth assures me that he has seen these birds attack and pursue the little Palm Squirrel. At the pairing season, they are exceedingly pugnacious: and four or five may not unfrequently be seen entangled together on the ground, fighting both with beak and claws.

The Drongo is lively, active, and loquacious, constantly uttering its well known, somewhat harsh, but cheerful cry; it is one of the earliest birds to greet the coming morn, and not unfrequently keeping up an occasional conversation with a neighbour for the greater part of a moonlight night. I have known people in India who professed to find it monotonous and disagreeable, and have heard it profanely called the Scotch Nightingale; but I confess

to liking its cheerful voice, and to hear it herald in the pleasant dawn of day.

During the breeding season it has a more pleasing and melodious song, which Sundevall calls a charming song, something like that of *Sylvia trochilus*.

The King-crow breeds at various seasons, a good deal according to the locality; from March and April in some places, to August and September in other. It is possible it may have two broods in the year, but I do not know this. The nest is a slight, shallow structure, carelessly put together, of a few small twigs and roots, and generally placed in a rather conspicuous place, on the fork of a branch at no great elevation, generally without any lining, or sometimes with a few hairs. The eggs, three or four in number, are reddish-white, with a few largish spots or blotches of purplish-red, brick-red, or red-brown. It appears to leave some parts of the country during the rains, for Mr. Elliot states that "it migrates from the Southern Mahratta country during the monsoon;" but it only retires a short distance to some more convenient place for breeding.

Its flight in general is undulating, not very rapid, and performed but with few flappings; but when it exerts itself after a Crow it is capable of great speed, and always overtakes its enemy with ease.

Mr. Philipps relates a curious instance of sagacity or reasoning in this bird, once witnessed by himself. Another bird was pursuing a large locust which the King-crow evidently coveted, for he made one or two dashes after it, but apparently did not dare to seize it; when he suddenly gave his cry of alarm, betokening the presence of some bird of prey; the original pursuer of the insect quitted the chase, and the King-crow carried off the locust as his lawful booty. Mr. Swinhoe relates that he found this species breeding in company on bamboos in Formosa.

This is the most common and abundant species of *Dicrurus*, and is met with over the whole of India, from the foot of the Himalayas to Cape Comorin, and from the Punjab to Arrakan, Burmah, and even to Java.

279. **Dicrurus balicassius,** LIN.

Corvus apud LINNÆUS—BLYTH, Cat. 1218—D. affinis, BLYTH, J. A. S., XI., 174; Pl. Enl. pl. 603—Bhuchanga annectans, HODGS., I. R., 1837—Oriolus furcatus, GMEL.

THE CROW-BILLED DRONGO.

Descr.—Plumage entirely glossy black, as in the last species, but wanting the white spot at the gape; bill very large, wide at the base; upper ridge well elevated; tail less forked than in *macrocercus*, the outer feathers just curling perceptibly outwards.

Bill and legs black; irides brown. Length about 10 to $10\frac{1}{2}$ inches; wing $5\frac{1}{4}$ to $5\frac{3}{4}$; tail, outer feathers 5 to $5\frac{1}{2}$; bill at front $1\frac{1}{8}$.

This species is placed by Bonaparte as the type of his sub-genus *Balicassius*, under the name of *B. furcatus*; and the Australian species, *D. bracteatus*, Gould, and another from the Philippines, are included in the group. A New Guinea species, *E. mezorhynchus*, Q. and G., is given as *Dicronostreptus*, Reich.

This remarkable Drongo appears to be very rare in Nepal, in the lower valleys near the plains, and extends thence eastward through Lower Bengal and Dacca to Assam, Burmah, and Malacca. Nothing peculiar is recorded of its habits, but it is probably a forest species. I did not procure it at Darjeeling nor in the Sikhim Terai.

280. **Dicrurus longicaudatus,** A. HAY.

Madr. Jour. XIII.—JERD., Cat. 2nd Suppl.—D. pyrrhops, HODGS.—D. macrocercus apud JERDON, Cat. 57—BLYTH, Cat. 1220—D. intermedius, BLYTH—HORSF., Cat. 196.—D. cineraceus apud GRAY—HODGS., Cat. Birds.—*Sahim*, or *Sahem pho*, Lepch.—*Chéchum*, Bhot.—*Nil Finga*, Beng.

THE LONG-TAILED DRONGO.

Descr.—Above glossy bluish-black, beneath dusky blackish, with a tinge of blue; wings and tails brownish-black, also with a blue gloss. The young bird, as in others of the genus, has some white mixed with the black of the abdomen and under tail-coverts

Bill and feet black. Bill more depressed than in *D. macrocercus*, and less strongly keeled. Irides brownish-red; tarsus very short; tail-feathers more slender than in any of the others; feet small.

Length nearly 12 inches; extent 16; wing $5\frac{1}{2}$; tail 7 or $6\frac{3}{4}$; tarsus $\frac{6}{10}$; bill front ; weight 1 oz. 9 dwt.

The Long-tailed Drongo is found wherever there is lofty forest jungle, from the Himalayas to Travancore and Ceylon, and through Assam to Burmah and China. I have killed it in Malabar, the Wynaad, Coorg, and the Neilgherries. It is found occasionally about Calcutta and all along the Himalayas up to 8,000 ft. of elevation. It is tolerably common at Darjeeling. Dr. Adams says that it is common in Cashmere, where he has often found the nest, and he confirms Hutton's account of the nest and eggs. Captain Hutton records it as being migratory at Mussooree, coming in about March, and retiring about September, but only to the Doon or lower valleys.

It is a permanent resident in the South of India. It takes its perch on or near the summits of lofty trees, and now and then makes a considerable circuit, apparently capturing several insects before returning to its perch, and then re-seating itself on some other tree. At other times it merely sallies forth, picks up an insect on the wing, returning to the same perch. At times I have seen three or four together, but at some little distance from each other, and each returning independently to its own perch. I have never seen this Drongo descend to the ground after an insect. Its chief food is bees, bugs, and other insects. Its flight is similar to that of *macrocercus*, but more elegant and more continued. Like that species it occasionally drives Kites and Crows from its neighbourhood. I found its nest on one occasion, in April, in Lower Malabar. It was shallow and loosely made with roots, and lined with hair, above 20 feet from the ground, on the fork of a tree; and it contained three eggs of a pinkish-white colour, with some longish rusty or brick-red spots. Hutton describes the nest, as seen at Mussooree, to be neatly made with lichens, grasses, and spiders' webs; the eggs, he says, are very variable, some being white with brick-red spots, as mine were; others with claret spots; others again

deep cinereous, with rusty-claret spots; and some faintly cinereous, with rufous clay-colored blotches. I obtained one nest and eggs at Darjeeling, and the eggs were white, with purple-claret spots. Layard's remarks on the habits of this species, which is also found in Ceylon, appear more applicable to *macrocercus*.

The Long-tailed Drongo has a pleasant song, not so sweet, however, as that of the next species. To this division of *Dicrurus* belong *D. forficatus*, from Java; *D. pecinus*, Mull., from Sumatra, the smallest of its tribe; and several others from the more distant islands.

281. **Dicrurus cœrulescens**, Lin.

Lanius fingah, Shaw—Edwards, pl. 56—Jerd., Cat., 56—Blyth, Cat. 1222—Horsf., Cat. 197—*Phari buchunga*, Hind.—*Dhapri*, H. (Buch. Ham.)—*D'houli*, Beng.—*Nella* (or *Konda*) *passala poligadu*, Tel.

The White-bellied Drongo.

Descr.—Upper plumage, wings, and tail, black, with a blue gloss; chin, throat, and breast, iron-grey; abdomen and lower tail-coverts, white; bill and feet black; irides lakeed.

Length 9½ inches; wing 4¾; tail nearly 5; tarsus $\frac{8}{10}$; bill at front $\frac{7}{10}$.

This species is the type of Bonaparte's sub-genus *Buchanga*, to which belong *D. leucopygialis*, Bl., from Ceylon, very closely allied to *D. cineraceus* from Java and China; and *D. leucophæus*, V. (*cineraceus*, Blyth), from Malacca.

The White-bellied Drongo is found throughout India, in open forest, in the well-wooded districts generally, and, now and then, in gardens and groves, throughout the barer portions of the country, but it is nowhere plentiful. Thin open forests are its chief haunts, from the level of the sea, to 4,000 feet of elevation. I have seen it in Malabar, and on the slopes of the Neilgherries, at Madras, Nellore, Central India, and rarely near Calcutta. Eastward of the Bay of Bengal it has not been observed.

It almost always captures its insect-prey on the wing, from a moderately high perch. I have, however, seen it descend to the

ground for one. It has a very sweet song, as well as the usual harsh cry of the birds of this genus. Tickell calls its song a wild mellow whistle, pleasingly modulated.

Other species of this genus are found in Burmah, Ceylon, and the Malay countries generally. One, *D. lencophæus*, from Malacca, is of a light ashy color, and evidently forms the link to the *Campephaginæ*. *Dicrurus edoliformis*, Blyth, from Ceylon, is a remarkable species, with the bill and plumage of *Edolius*, but wanting the lengthened outer tail-feathers, which are a little longer only than the next pair, and have a distinct curve inwards.

The African species of Drongo are separated under the name of *Musicus*, Reichenbart, *Drongo*, Bonap.

Gen. CHAPTIA, Hodgson.

Ind. Rev. 1327.

Char.—Bill much more depressed and feeble, *Muscipeta*-like, wide; the culmen very gently arching, and feebly hooked and toothed; 1st quill very short; 4th longest; 3rd and 6th equal; tail moderately forked; legs and feet very feeble.

This genus differs remarkably from the last in the character and glossy lustre of the feathers, which are scale-like and lanceolate on the head and neck. In this respect it resembles *Chibia* and *Bhringa*.

282. **Chaptia ænea**, VIEILLOT.

Levaill., Ois. d' Afrique, pl. 476—JERDON, Cat. 51—BLYTH, Cat. 1212—HORSF., Cat. 206—Dicr. aëratus, STEPH.—Chaptia muscipetoides, HODGS.—*Buchanga*, Beng.—*Chota kesraj* at Gorukpore—*Chaptya* (*i. e.* flat-billed), Nepal.

THE BRONZED DRONGO.

Descr.—Plumage throughout richly glossy bronzed blue-black; quills and tail black, with a faint gloss; abdomen, vent, and under tail-coverts, dull grey-black.

Bill and feet black; irides deep brown. Length 9 to $9\frac{1}{2}$ inches; wing $4\frac{3}{4}$; tail $4\frac{1}{2}$; tarsus $\frac{6}{10}$; bill at front $\frac{3}{4}$.

The Bronzed Drongo generally is found in dense and lofty forest jungle, from the level of the sea to 4,000 ft. of elevation; I have seen it on the Malabar coast, the slopes of the Neilgherries in high

forest, also towards the North, in well-wooded districts, as in Lower Bengal. I have also observed it on the Malabar coast; in high forest in the Bustar country in Central India; at Calcutta; and on the lower slopes of the Himalayas. Blyth observed it to be common in the teak-forests of Upper Martaban. It is usually found in small parties, near the top of some lofty tree, whence it sallies forth after insects exactly like some of the Fly-catchers, and returns generally to the same perch. It sings very charmingly.

A closely allied species is found in Malayana, *C. malayensis*, A. Hay.

Gen. Bhringa, Hodgs.

Syn. *Melisseus*, Hodgs.

Char.—Bill moderately depressed at the base, well curved on the culmen, and strongly hooked and notched at the tip; rictal bristles long, but feeble; base of the bill impended by an elevated ridge of recurved feathers, successively longer to the front; wings long; 4th quill longest; 5th sub-equal to it; 3rd a good deal shorter; tail nearly even, with the outermost pair, during the breeding season, greatly lengthened; the shaft naked from where it exceeds the other feathers, with the tip barbed on both sides for about 3¼ inches, forming a racket-tail.

283. Bhringa remifer, Temm.

Pl. Col. 178—Blyth, Cat. 1214—Horsf., Cat. 205—B. tectirostris, Hodgs.—*Bhringa*, Nepal—*Nambong punnong*, Lepch., *i. e.* the 'Royal bird'—*Piadiya-po*, Bhot.

The Lesser Racket-tailed Drongo.

Descr.—Color a richly steeled black, with brilliant metallic gloss; feathers of the crown scale-like, those of the nape hackled; pectoral plumes intermediate. Length to end of central tail-feathers 10 inches, of which the tail is 5; outer tail-feathers 12 to 15 inches more; wing 5¼; tarsus ¾; bill at front ⅞.

The bare stem of the outer tail-feathers takes a half turn, so that the racket-shaped tips are nearly vertical, with the upper side inwards.

This very beautiful species of Drongo is only found in our province in the hilly regions of the Himalayas, extending into Assam, Burmah, Tenasserim, and Malayana. At Darjeeling it is found in the warmer valleys, rarely so high as 4,000 ft. It lives in the dense woods, generally near streams or rivers, and is found in bamboo-jungle. It feeds entirely in the air, on insects of various kinds, and has a fine ringing note, softer than that of *Edolius paradiseus*. A nest with eggs were brought to me in June, said to be of this species. The nest was loosely made with sticks and roots, and contained three eggs, reddish-white, with a very few reddish-brown blotches.

The lengthened outer tail-feathers, as I found when at Darjeeling, are only a seasonal ornament, being put on at the breeding season. When not in breeding plumage, the outermost tail-feathers are of the ordinary shape, and only slightly exceed the penultimate in length.

This is the only species of the genus.

Gen. Edolius, Cuv.

Syn. *Dissemurus*, Glog. (Gray retains *Edolius* for *L. forficatus*, and adopts *Dissemurus.*)

Char.—Bill lengthened, strong, moderately depressed at the base, compressed towards the tip; the culmen well curved and hooked and distinctly notched, and the ridge well developed; rictal bristles long, rather weak; a few short frontal plumes cresting the nostrils, but they mostly rise up and fall back over the forehead, forming a fine crest; tail forked, the outermost pair have the inner webs gradually thinning off, and the shaft is bare for some distance, terminating in a web, long and broadish on the outer side, with a narrow and short web on the inner side.

284. **Edolius paradiseus**, Lin.

Syn. L. malabaricus, Latham, Gen. Hist., 2, pl. 18—Chibia malabaroides, Hodgs.—E. grandis, Blyth, J. A. S., XI., 170—E. dentirostris of Orissa, Jerd., Madr. Jour., XIII. 121, var A., and E. Blyth, Cat. 1215—Horsf., Cat. 202—*Bhimraj*, H. or *Bhring-raj*, *i. e.* 'King of the bees'—*Kalgia*, Nepal—*Tinka*-

passala poli-gadu, *i. e.* 'Long-tailed Drongo,' Tel.—*Hati* of the Gonds, *Parvak* or *parvok-pho*, Lepch.

THE LARGE RACKET-TAILED DRONGO

Descr.—Plumage uniformly black, with a steel-blue gloss; feathers of crown slightly hackled, those of the nape strongly so, on breast slightly; plumage generally loose and puffy; frontal crest falling backwards over the nape, varying from $1\frac{1}{2}$ to $2\frac{1}{4}$ inches in length.

Length, to end of ordinary tail, 14 inches; wing $6\frac{3}{4}$; tail to middle $6\frac{1}{2}$; outer tail-feather 12 to 13 inches more; the shaft having the terminal end, for about $3\frac{1}{2}$ inches, barbed externally, but towards the tip only on the inner side, and turning inwards, so that the under side becomes uppermost. Bill at front $1\frac{3}{8}$ to $1\frac{1}{2}$; tarsus 1 inch.

In conformity with the views of Horsfield and Blyth, I have considered the varieties we possess in Northern and Eastern India, as one and the same species. At the same time there are some well marked differences according to locality. Those from the Eastern Ghâts have the bill stronger, more compressed, the ridge sharper and the tip more deeply notched, and the crest is barely so long as in those from Nepal and Assam, whilst those from Goomsoor have the bill smaller and less strongly toothed, and the crest larger.

This very showy and curious bird is found in the dense forests of India, from the Himalayas to the Eastern Ghâts as far south as N. L. 15°. I have seen them from Nellore Ghats, Goomsoor, the forests of Central India, and they are found in Lower Bengal, the Sunderbuns, and the Himalayas. Out of our province it is found in Assam, Sylhet, Burmah and Tenasserim. Near Darjeeling they do not range higher than 1,500 ft. or 2,000 ft. of elevation.

This large Racket-tailed Drongo is found singly or in pairs, now and then in small parties, and appears to wander a good deal in search of food, flying from tree to tree, generally at no great elevation, making an occasional swoop at an insect on the wing, or sometimes whipping one off a branch.

Frequently, however, it hunts for some time from a fixed station, returning to the same tree. Its food is bees, wasps, beetles, dragon-

flies, locusts, and mantides. It has a very peculiar call, beginning with a harsh chuckle, and ending in a pecular metallic creaking cry. Mr. Elliot expresses it by *Tse-rung, Tse-rung.* It has, however, a great variety of notes. It follows birds of prey now and then, especially at the breeding time, just as our common King-crow does. I have had its nest brought me several times at Darjeeling; rather a large structure of twigs and roots, and the eggs, usually three in number, pinkish-white, with claret-colored or purple spots; but they vary a great deal in size, form, and colouring. They breed in April and May.

The Bhimraj is often caught and tamed, and may generally be had at Calcutta or at Monghyr, where the hill-men bring Shamas, Hill Mynas, Bhimrajs, and various other hill-birds for sale. It is a very amusing bird in confinement; will imitate all sorts of sounds, as of dogs, cats, sheep and goats, poultry, and the notes of many birds; hence it used to be called by some *Hazar-dastan,* or the bird with a thousand tales. Blyth had one that imitated the fine song of the Shama to perfection. In other respects, it is a very fearless and amusing bird in captivity, and is sometimes even suffered to have its liberty, coming readily to the call of its owner. It will eat raw meat, lizards, and almost any kind of animal food that is offered to it.

285. **Edolius Malabaricus**, Scop.

Lanius apud Scopoli—D. retifer apud Jerdon, Cat. 59.—E. cristatellus, Blyth—E. paradiseus, var. C., Blyth, Cat. 1215—Horsf., Cat. 203—*Kate-ongal*, Mahr.—*Karan*, Mal.

The Malabar Racket-tailed Drongo.

Descr.—Frontal crest short, barely 1 inch long, varying from $\frac{3}{4}$ of an inch to $1\frac{1}{4}$. Color much the same; bill proportionally smaller, and the bird also generally slightly smaller.

Length 13 inches; wing $5\frac{3}{4}$ to $6\frac{1}{4}$; tail $6\frac{1}{2}$; outer tail-feathers 12 more; bill at front $\frac{3}{4}$. This must be the *Grand Gobe-mouche de la côte de Malabar* of Sonnerat, Voyage, 2, pl. 3, from which Scopoli gave his name *Malabaricus*, and the omission of the crest in Sonnerat's figure is probably accidental, or perhaps an error of the draftsman.

It is doubtful, however, if it be the same as the Malay race to which Blyth and Moore give, after Latham, the name of *Malabaricus* (now *Malayensis*, Blyth), which is apparently still smaller, and with the crest very little developed. This Malay race should bear Temminck's name *setifer*, misprinted *retifer*. A race from the Andamans is mentioned by Blyth, as having a longer crest than the Malay bird, and being somewhat larger; and the Ceylon bird has also the crest more developed; but no specimens from Malabar being in the Museum at Calcutta, it is impossible to decide at present whether these races differ or not from the Malabar one.

This species or race is found in all jungles of the west coast, from Travancore up to Goa, especially in the Wynaad, and other elevated districts, but it also wanders now and then into gardens from the jungles, and I have seen it close to Cannanore. I never saw a specimen from the west of India, that had the frontal crest nearly so long as those from the same latitude, or nearly so, in the Eastern Ghâts. It does not differ in its habits from the last.

Mr. Blyth tells me that *E. Rangoonensis* of Gould, which he formerly considered the same as the crestless race from Malayana, is a distinct species, not from Burmah, but from the Philippines. Other species recorded are *E. brachyphorus*, Temm., apud Bonaparte, from Borneo, crestless; and *E. formosus*, Cabanis, from Banka.

Gen. Chibia, Hodgs.

Syn. *Cometes*, Hodgs. *Criniger*, Tickell.

Char.—Bill lengthened, compressed, curved both on the culmen and commissure, more slender than in others of the family, slightly hooked at the tip, and obsoletely notched; rictal bristles short and feeble; nostrils denuded; a crest of hairs arising from the forehead, and falling back over neck; tail forked; outer tail-feathers slightly lengthened, turned up into a sort of scoop; plumage of the head and neck highly lanceolate, especially on the sides of the neck.

286. Chibia hottentota, Lin.

Corvus apud Linnæus—Blyth, Cat. 1211—Horsf., Cat. 204—Criniger splendens, Tickell—Edolius Khrishna, Gould—Latham, Gen. Hist. 3 pl. 40—Chibia casia, Hodgs.—E. barbatus, Gray—Dicrurus criniger, Jerdon, Cat., 2nd Suppl., 58, bis—*Khrishna-raj*, or *Kishen-raj* or *Kesraj*, Beng., and Hind—*Kesya* in Nepal—*Povong-pho,* Lepch.—*Yentika-passala-poli-gadu*, Tel. *i. e.* the Haired Drongo.

The Hair-crested Drongo.

Descr.—Deep black, with purple and blue reflections on the hind-neck and breast; wings deep glossy bronze-green; tail the same; abdomen deep black; bill and legs black; irides red-brown.

Length nearly 12 inches; wing 6½; tail to end of outer tail-feathers 5; bill at front 1⅜; tarsus 1.

Captain Roberts, of the 36th M. N. I., first made known the existence of this bird in Southern India, he having found it in Coorg; and Lieut. (now Lieut.-Col.) Blake also shot it in the same locality. I procured it afterwards from the Eastern Ghâts as mentioned, Madr. Jour. XIII., and since that have procured it in Malabar. I found it in March on the silk-cotton trees, *Bombax malabaricum,* several together, apparently feeding on insects harbouring in the fine flowers of that tree, for which its long tenuirostral bill must be well adapted. I again saw it hopping and flying among the branches of a lofty tree in Wynaad, apparently picking insects now and then off the twigs or leaves. Tickell, who procured it in the jungles of Chota Nagpore, says that it frequents large timber-trees on the banks of nullahs, tanks, &c., and mentions that the cotton-tree in blossom was a great resort. It frolics about, says he, in small parties; its voice is changeable, and in constant exertion, from a beautiful song, to whistling, chattering, and creaking like a rusty wheel, at times resembling the higher strains of the organ, both striking and plaintive.

Besides the localities referred to above, the Hair-crested Drongo is found about Calcutta, in the Sunderbuns, and in the Himalayas, extending into Assam. Blyth observed it, in abundance, in parts of the forests of Upper Martaban. I procured it from the

warmer valleys near Darjeeling. Mr. Hodgson states that it feeds on wasps, bees, green beetles, &c., very rarely vetches; that it lives part of the year in pairs, or singly, and the rest in families; that it descends from its lofty perch to seize an insect on the wing, and occasionally seizes on the ground. I imagine that the vetches, stated by Hodgson to vary its food occasionally, must have been taken in its mouth with some insect which it seized off the plant.

Buch. Hamilton says it is common in the neighbourhood of Calcutta, building among bamboos, living in pairs, and feeding on insects and fruits. It is said to sing well, he says, and is frequently tamed by the Mussulmans, who in the morning carry it about, and invoke the name of God and the prophet, in the same manner as they do with Parrakeets. The Lepchas at Darjeeling brought me the nest, which was said to have been placed high up in a large tree. It was composed of twigs and roots, and a few bits of grass, and contained two eggs, livid white, with purplish and claret spots, and of a very elongated form.

Sub-fam. ARTAMINÆ, Swallow-shrikes.

Bill short or moderate, wide at the base, deep, slightly curved; culmen rounded; commissure gently curved; barely hooked at the tip, and entire; nostrils basal, impended by a minute tuft at their base only; a few inconspicuous rictal bristles; tarsus and toes short, strong; claws well curved, acute; wings long; 1st quill minute, 2nd longest; tail short, or moderate, even or slightly emarginate; lateral toes nearly equal.

The Swallow-shrikes are placed by Swainson and Horsfield in their *Dicrurinæ*. Gray elevates them to a distinct sub-family, in which I follow him, but consider that they do approach near to the Drongos. Blyth places them as a distinct family, between the *Dicruridæ* and the Swallows; and others place them with the true Shrikes, or even with the Swallows. They comprise a small number of birds from India and Malayana, but greatly developed in Australia, which hunt for insects in the air like Swallows, for which their long wings are well suited, though they are unable to keep up their flight for a great length of time. Some of the Australian species have the very remarkable habit of clustering like bees. They are mostly of sober grey plumage; some from

Australia, by their longer tail, lengthened bill, and chesnut under-plumage, making an approach towards some of the oceanic *Campephaginæ*, and perhaps to *Monarcha* among the Flycatchers. The little *A. minor* of Australia is remarkably Swallow-like, and it is possibly through these birds that the present tribe partly grade with the *Fissirostres*.

Gen. ARTAMUS, Vieill.

Syn.—*Ocypterus*, Cuv.

Char.—Those of the sub-family.—It has lately been sub-divided into two genera, *Artamus* and *Ocypterus*, the former being retained for the thick-billed species, the latter for those with more lengthened, curved, and slender beaks. The Indian species belong to true *Artamus*.

287. **Artamus fuscus**, VIEILL.

Ocypterus rufiventer, VALENC. Mem. Mus. VI., pl. 7—*O. leucorhynchos* apud JERDON, Cat. 54—BLYTH, Cat. 1207—HORSF., Cat. 208—*Tari ababil*, Hind. in the South, *i.e.* Palmyra Swallow—*Tal-chatak*, Beng., and *Tati-pitta*, Tel., also having the same meaning —*Murâsing* of Mussulmans in Bengal—*Sillianychi pho*, Lepch.

THE ASHY SWALLOW-SHRIKE.

Descr.—Lores black; the general hue cinereous, or ashy-grey, purest on the head, and with a tinge of rufous on the back and scapulars; breast, abdomen, under wing-coverts, and under tail-coverts, ashy-white, with a tinge of rufous on the belly; quills and tail blackish ashy-grey, the latter tipped narrowly with pale ashy; upper tail-coverts white beneath, shewing a white border next the dark tail. Bill pale bluish, darker at the tip; legs slaty; irides dark brown.

Length about 7 inches; wing $5\frac{1}{4}$; tail $2\frac{2}{10}$; extent 15; bill at front $\frac{5}{8}$; tarsus $\frac{5}{8}$.

This Swallow-shrike is spread throughout the whole of India and Ceylon, being very numerous in some localities, but locally distributed; for you may pass over large tracts of country, apparently well suited for them, and not see one. It extends into Assam

and Burmah. It is most abundant in wooded districts, especially where palm-trees abound, more particularly the Palmyra palm, from which indeed it takes several of its native names. Where they are numerous, several may be seen seated on the same branch, but they fly off independently of each other, and after a flight of some few minutes, return either again to the same perch or to another tree. At times I have seen an immense flock in the air all together, hunting for insects, and remaining on the wing for a much longer period. A small party may occasionally be seen, skimming over the surface of a tank, picking up an insect now and then, and returning to a high bough of a tree, overhanging the water. They live entirely on insects of various kinds. I have found them most abundant in the Carnatic, the Malabar coast, the Northern Circars, and Bengal; very rare in the Deccan and Central India. To my great surprise, I found them on the sides of hills at Darjeeling, on cleared spots up to above 4,000 ft. of elevation.

I have procured the nest of this bird, situated on a Palmyra tree on the stem of the leaf. It was a deep cup-shaped nest, made of grass, leaves, and numerous feathers, and contained two eggs, white with a greenish tinge, and with light brown spots, chiefly at the larger end. I see that Mr. Layard procured the nest in Ceylon, where this bird is common, in the head of cocoa-nut-trees, made of fibres and grasses; and it was probably the nest of this bird that was brought to Tickell, as that of the Palm Swift, *Cypselus batassiensis*.

Its flight is elegant and Swallow-like, a few rapid strokes of the wing alternating with a gliding flight with outspread wings, and often in circles, or, when in close pursuit of an insect, rapid and direct. Its cry, which it frequently utters, both when seated and in flight, is plaintive, very like that of the Shikra (*Micronisus badius*), but more subdued.

The true *A. leucorhynchos*, with which the Indian species was long confounded, inhabits the Philippines; and *A. leucogaster*, Val. (*leucorhynchos* apud Horsfield), is from Java and Sumatra, and also the Andaman islands; and there are several others from the more distant islands, and many from Australia. The genus

Artamia, sometimes placed in this sub-family, is said doubtfully to belong to it; but there are some Madagascar birds, which, when better known, may be found to be nearly related to the *Artaminæ*. The genera *Analcipus*, Swains. and *Anais*, Lesson, are sometimes located here, sometimes among the Orioles.

Fam. MUSCICAPIDÆ, Flycatchers.

Bill rather wide, depressed, shallow; the culmen straight, distinctly hooked and notched at the tip; rictal bristles (typically) numerous and strong; wings moderate; tail generally rather short or moderate; tarsus short, weak; feet moderately small, feeble.

The Flycatchers are a group of insect-eating *Dentirostres*, generally of small size, and with a much more feeble bill than any of the Shrikes, but with the gape wide, and tolerably strong rictal bristles to enable them to seize and hold winged insects, which form their chief diet. Their wings are not adapted for long and speedy flight, but they are capable of rapid and powerful sallies; their legs and feet, only used for perching, are short and feeble.

In India there are two distinct groups or sub-families, the *Myiagrinæ*, comprising the *Muscipeta* and *Rhipidura* of Cuvier, with a few others; and the *Muscicapinæ*, nearly corresponding to the restricted *Muscicapa* of Cuvier, containing birds more or less related to the European Flycatchers, and many other allied forms.

Some of these last are ranked among the *Saxicolinæ*, or Stonechats, by Blyth and Horsfield; but Gray includes them all in his *Muscicapinæ*, and I quite agree with him. In their anatomy, the Flycatchers do not differ much from the usual type of *Dentirostres*. The stomach is not very muscular, and the intestines are rather short. In some the keel of the sternum is tolerably developed.

It does not seem very clearly agreed on, what families of birds, foreign to India, should be included among the Flycatchers; but the greater part of the *Tyranninæ*, or Tyrant-flycatchers, and the *Alectrurinæ* of Gray (*Fluvicolinæ* of Swainson), both American groups, should perhaps be located here. Gray and Swainson include, among their *Muscicapidæ*, the *Vireoninæ* or Greenlets, and the *Tityrinæ*, or Blackcaps, both from America; but they appear

to me to be too thick-billed for this family, and the Greenlets should, I think, be associated with the *Pachycephalinæ*; and the *Tityrinæ* either to the same group or to the Shrikes, along with some of the larger *Tyranninæ*. Perhaps the *Setophaginæ* of America would be better placed among the Flycatchers, as is done by Gray and Blyth, than among the *Mniotiltinæ*, as Swainson and Bonaparte class them; but I do not think that they enter the sub-family of *Muscicapinæ*, where Gray has located them, but should join certain of the American Flycatchers, which would then form two or three distinct groups.

Swainson includes among the Flycatchers the *Eurylaimidæ*, already treated of (*Fissirostres*, p. 235,) and the *Todidæ*, p. 239.

Sub-fam. MYIAGRINÆ, Bonap.

Syn. *Tchitreadæ*, Blyth, True Flycatchers.

Bill broad at base, much depressed, straight, considerably hooked at the tip, and notched; rictal bristles numerous and long; wings rather lengthened; tail moderate or somewhat long, in one genus with the central tail-feathers greatly elongated in the male sex; feet and legs short and feeble.

The true Flycatchers comprise a group of birds of varied plumage and form, distinguished by their triangular flat bill, long rictal bristles, and very feeble feet. They are peculiar to the tropical and sub-tropical regions of the Old World, extending to Australia. The young birds are coloured much like their parents, only duller. In their habits they are more active and restless, more on the wing, than the next sub-family; and they live chiefly on soft-winged insects, which they almost always capture in the air, often with a loud snap of their mandibles, occasionally picking one off a leaf or a branch. Those whose nidification is known, build a neat nest on the fork of a tree or bamboo, and lay white eggs with reddish spots.

Gen. TCHITREA, Lesson.

Syn. *Muscipeta*, Cuv.

Char.—Bill lengthened, wide, depressed at the base, tolerably stout and deep, narrowing suddenly at the tip, which is moderately

hooked and notched; the ridge of the culmen raised; nostrils somewhat in front, protected by a few stout nareal bristles, and plumed at their base; gape wide; rictal bristles numerous, long, and stout; wings rather long, somewhat pointed; the first four quills unequally graduated; 4th and 5th sub-equal and longest; tail rather long, cuneate, with the two central feathers greatly elongated in the male; feet and legs short and feeble; head crested.

This is a very beautiful group of birds found both in Africa and India, to one of which Linnæus gave the name of *paradisi*, and they are popularly known in India as Birds-of-paradise. Several of the species undergo a remarkable change of plumage, from chesnut to white. Of late the Indian species have been separated as *Terpsiphone*, Gloger; and *Tchitrea* is retained for the African birds.

288. Tchitrea paradisi, Lin.

Muscicapa apud LINNÆUS—BLYTH, Cat. 1225—HORSF., Cat. 168—Muscipeta paradisi and M. Indica, STEPHENS, apud SYKES, Cat. 36, and 37, and JERDON, Cat. 146 and 147—JERDON, Ill. Ind. Orn., pl. 7—GOULD, B. of Asia, pl. *Shah bulbul* and *Hosseini bulbul*, H. (the white bird), *Sultana bulbul*, H. (the red bird).—*Taklah*, H. in the N. W. P.—*Tonka pigli pitta*, Tel.—*Wal kondalati*, Tam., both names meaning Long-tailed Bulbul.

The Paradise Flycatcher.

Descr.—Adult male—Whole head with the full crest, neck and throat, glossy green-black; the rest of the plumage white, the feathers more or less black-shafted; primaries and secondaries black, with the outer webs white, and also the edge of inner webs of the innermost quills. Head with a full crest of elongated feathers; two central tail-feathers greatly elongated.

The adult female is similar to the male, its middle tail-feathers are only slightly lengthened.

The younger male has the head, neck, and throat, glossy black, the abdomen white, and the rest of the plumage light chesnut.

The young female has the same, without the long tail. In a still younger state, the throat, breast, upper part of abdomen, and the flanks, are ashy.

Bill and eyelids cobalt-blue; legs and feet pale lavender-blue; irides deep brown.

Length to end of outer tail-feathers, about 9 inches; wing $3\frac{8}{10}$; tail $4\frac{1}{2}$ to 5 inches; central tail-feathers sometimes 15 or 16 inches; bill at front $\frac{7}{10}$, or nearly $\frac{3}{4}$; tarsus $\frac{7}{10}$.

A complete account of the changes of plumage of this and the next species is still a desideratum. In the above description I have given the generally received account of the phases of plumage; but at what age the chesnut bird becomes white is not precisely ascertained. Nestlings that I have seen have the head and crest, which latter is not much developed, ashy-black, and the chesnut dull. At the first moult, the plumage described as that of the 'still younger state' is probably assumed; next year the bright chesnut; and at the breeding season of the third year, the feathers probably begin to change to white, and at the autumnal moult most probably become entirely white. Some observers have suggested that the white livery is only the nuptial plumage, and that the chesnut plumage is re-assumed at the next moult; but I have not seen any specimens warranting that surmise, and *per contra* have seen young feathers perfectly white, so that that hypothesis is untenable. The change of coloration through some organic chemical process, which is well known to effect a change especially in the tips of the feathers of many birds during the breeding season, also appears always to begin first in the substance of the feather itself, and generally shews itself first in the quills or rectrices. Many interesting specimens exhibiting this change are in the Museum As. Soc., Calcutta. I figured a bird in a state of change in my 'Illustrations of Indian Ornithology,' as in some of the later publications on Indian birds,* it had been asserted that the chesnut and white-colored individuals were distinct in species; but I see that Levaillant, who has figured this bird, pl. 144 to 146 of his *Ois. de l'Afrique*, had previously given drawings of some highly mottled and

* Sykes's Catalogue.

interesting specimens from India showing this change. It has been stated in a late No. of *The Ibis* that the long tail-feathers of the African species are seasonal, and Sundevall appears to countenance this idea; but from the different times at which I have killed the Indian bird with its lengthened tail, I doubt if this can be the case with it. Dr. Adams (P. Z. S. 1858, p. 495), appears to think that the male bird alone assumes the white plumage (in which case the long tail-feathers would be seasonal, seeing that we often get short-tailed white birds); and he also states that the females can be distinguished from chesnut males by the color of the primaries, which are brown in females, black in young males.

This Paradise Flycatcher is found over the whole of India, from the extreme South and Ceylon to the base of the Himalayas; but is replaced in the lower S. E. Himalayan ranges, and in all the countries to the eastward, by the next species. It is more or less a permanent resident in the forests and highly wooded districts, but only a temporary sojourner in the more open parts of the country, and the brief and uncertain visits it pays to many stations are perhaps the cause of its various changes not having been fully observed. It does not, in general, ascend hills to any great height above the level of the sea, and I have not seen it higher than about 2,000 ft. It is very partial to bamboo-jungle, and is said to breed in bamboo clumps.

In its habits it is restless and wandering, flitting continually from branch to branch and from tree to tree. It feeds chiefly on small flies and cicadellæ, almost always capturing them on the wing, sometimes picking one off a leaf or bough. I never saw it descend to the ground, as mentioned by Sykes. It is usually single, or in pairs. Its flight is somewhat undulating, and it has a curious appearance on the wing, its long tail moving in jerks. I have heard no note except a rather loud harsh grating cry of alarm. I have never seen its nest. Layard says that it makes a neat nest of moss and lichens, lined with hair and wool. The Ceylon names of the bird are *Fire-thief* and *Cotton-thief* respectively for the red and white birds.

I have kept this Flycatcher alive for a few days in a closed room, and it used to be flitting about, catching flies and mosquitoes, the

whole day. One flew on board a ship in which I was a passenger in the Bay of Bengal, between Madras and Vizagapatam, in October 1836, and remained three or four days in the rigging. Blyth tells me that he has kept it for many months in a large aviary, where it subsisted on the flies which were attracted by the odour of the shrimps, with which various small waders and others were daily supplied.

289. **Tchitrea affinis**, A. Hay.

Muscipeta apud Hay, J. A. S., XV., 292.—Blyth, Cat. 1226—Horsf., Cat. 169.

THE BURMESE PARADISE FLYCATCHER.

Descr.—Adult male—Whole head and neck, with crest, glossy black; the rest of the body white; the feathers of the back, with the black shafts more developed than in the last species; the lengthened middle tail-feathers being black-shafted throughout their whole length, and often more or less conspicuously margined throughout, both externally and internally, with black.

The adult female is coloured as in the male, but the caudal feathers are broader.

The young male has the head, with crest, glossy black; the nape somewhat glossy dark ashy; the throat, neck and breast, and upper part of abdomen, shining ashy, paling and becoming white on the lower part of the abdomen, vent, and under tail-coverts; upper plumage bright chesnut. Young females have the head black; the nape, throat, neck and breast, dark ashy; the abdomen lighter; the upper plumage chesnut, with strong black shafts on the tertiaries.

Bill, feet, and irides, as in the last. Length 8 to $8\frac{1}{2}$ inches; wing $3\frac{3}{4}$; tail 4; middle tail-feathers 10 to 14 inches

Mr. Blyth notices that, in one specimen, the pair of rectrices next the middle feathers were 7 inches long.

This is a smaller species than the last; the crest is not so long, and the feathers composing it are more equal and commingled into an uniform surface; and the lengthened tail-feathers also are more narrow, and not so long. The white birds are not always very distinguishable from those of the last species; for in some specimens the central tail-feathers want the black shaft in part of their length,

especially at the tip. Can these be hybrids? The small crest is in these cases the most permanent difference.

The chesnut birds can always be recognised by the absence of the rich glossy black neck and throat of *T. paradisi;* and moreever the inner webs of the quills are dusky-black in this, chesnut in the former species.

This Flycatcher takes the place of the last in the sub-Himalayan regions of Nepal and Sikhim within our province, extending into Assam, Burmah, and Malayana.

Other eastern species of *Tchitrea* are *T. atricaudata,* Eyton (*atriceps,* Bl.), from Malacca; a very beautiful species, *T. principalis,* (*T. princeps,* Gray, *T. Incei,* Gould), from China and Japan; and *T. Gaimardi,* Lesson, from New Guinea.

T. rufa, Gray, figured in the 'Genera of Birds,' has been separated as *Xeocephus,* Bon.

There are a good number of African species kept under restricted *Tchitrea,* some with similar coloring to the Indian species, others mostly black.

The genus *Philentoma* contains several richly coloured birds from Malacca and the isles; among others *P. velatum,* T. (*Musc. pectoralis,* A. Hay), and *Ph. pyrrhopteron,* T. (*Musc. plumosa* Blyth and *Ph. castaneum,* Eyton),—both from Malacca.

Gen. Myiagra, Vigors.

Char.—Bill of moderate length and strength, broad, triangular, suddenly narrowed, straight, tip well hooked and distinctly notched; rictal bristles long, slender, numerous; nostrils small, basal, plumed at the base and overhung by a few fine hairs; wings moderate, broad, 4th and 5th quills about equal and longest; tail rather long, even or slightly rounded; tarsus rather short; feet very small; outer toe much longer than inner one, much syndactyle.

This genus, of which there is only one species in India, is tolerably developed in Australia and Oceanica. It is evidently nearly related to *Tchitrea* in the form and colour of the bill and its evanescence after death, its demi-crest, and other points; and in its habits to the Fantails.

The following species has been separated from *Myiagra* (*Hypothymis*, Boie*), but I shall only indicate, without adopting it. It appears to have a narrower bill than some of the Australian *Myiagræ*, but is evidently only a slightly aberrant species.

290. Myiagra azurea, Bodd.

Muscicapa apud Boddaert—Pl. Enl. 666, f. 1—Blyth. Cat. 1231—Horsf., Cat. 178—M. cærulea apud Jerdon, Cat. 148—M. cæruleo-cephala, Sykes, Cat. 43 (the female)—M. occipitalis, Vigors—*Kala katkatia*, Beng.

THE BLACK-NAPED BLUE FLYCATCHER.

Descr.—Above pale lazuline blue, with the head and neck paler but brighter blue; a large occipital spot of short erectile feathers, and a slender jugular one, silky black; throat, neck, and breast, pale blue; abdomen, vent, and under tail-coverts, bluish-white.

The female is bluish-ashy above; the head and neck pale blue, and the abdomen white; and it has neither the occipital crestlet nor jugular black streak.

The bill and legs fine delicate cobalt-blue; legs bluish-plumbeous; irides deep brown.

Length 6 to $6\frac{1}{4}$ inches; wing $2\frac{3}{4}$; extent 8; tail $2\frac{3}{4}$; bill at front about $\frac{4}{10}$; tarsus $\frac{1}{2}$.

This pretty Blue Flycatcher is widely spread through India and Ceylon, extending to Assam, Burmah, Malayana, and even to China and some of the more distant islands. Here it is generally to be met with in every well-wooded part of the country, and in forest, or bamboo-jungle, ascending to an elevation of 3,000 ft. on the slopes of the Neilgherry and other mountain ranges. In Central and Northern India it is often to be seen in very open country, frequenting clumps of trees, or single trees near villages. It is almost always solitary, flying from tree to tree, remaining a short time on each, capturing a few insects on the wing. Now and then I have seen it flitting actively about among the branches, and spreading its tail just like the Fantails (*Leucocerca*). Mr. Ward procured the nest at Honore in a

* This name has been applied erroneously to the species of *Eumyias*.

bamboo-clump, made with bamboo leaves and fibres, and containing two eggs, white, with a few large blotches of purplish-red.

A second species, nearly allied to this, appears to exist in *Musc. manadensis*, Q. and G., from the Oceanic region. Some of the Australian *Myiagræ* are dark or plumbeous blue, while others have the under parts rufous, resembling our *Cyornis*.

Gen. LEUCOCERCA, Swains.

Syn. *Rhipidura*, pars, Vigors and Horsfield.

Char.—Bill rather long, depressed, wide throughout, except at the tip, which is slightly hooked and notched; nostrils apert, but overhung by some long nareal bristles; rictal bristles very long, slender; wings with the first four quills unequally graduated; 4th and 5th quills sub-equal and longest; tail lengthened, wide, rounded or graduated; tarsus moderate, strong; feet moderate; lateral toes unequal.

This genus, which was separated by Swainson from *Rhipidura*, is not very strongly characterized apart from that genus, but contains several Indian and Malayan species, and may be considered as the Indian form of *Rhipidura*; Bonaparte, however, extends it to two species from New Zealand and Oceania.

291. **Leucocerca fuscoventris**, FRANKLIN.

Rhipidura apud FRANKLIN, P. Z. S., 1831—SYKES, Cat. 46—BLYTH, Cat. 1241—HORSF., Cat. 188—Muscylva albogularis, LESSON, Voy. BELANGER—M. sannio, SUNDEVALL—Rhip. albigula, HODGSON—*Chok-doyal*, Beng.—*Chak-dil*, in the N. W. P.—*Nam-dit-nom* Lepch.

THE WHITE-THROATED FANTAIL.

Descr.—Sooty brown-black throughout, tinged with ashy in the abdomen and back, and dusky-brownish on the wings and outer tail-feathers, the three outermost of which are tipped with dirty white; a very short supercilium, chin and throat white.

Bill and legs black; irides dark brown. Length $7\frac{1}{2}$ inches; extent $9\frac{1}{4}$; wing $3\frac{1}{8}$; tail $4\frac{1}{2}$; bill at front $\frac{5}{16}$; tarsus $\frac{3}{4}$.

I have only seen this species in Bengal and Sikhim. It is not known in most parts of the South of India, nor did I see it at

Jalna close to Col. Sykes's district. He includes it in his birds of the Deccan; and I observe that Adams states that it is common at Poona, but does not assert the same of *albofrontata* which I found so abundant at no great distance. Franklin procured it in Central India; and it extends into Assam and Burmah.

It is very abundant at Darjeeling in the spring and summer, descending to the valleys and plains in winter. It is generally seen in pairs, flitting restlessly about trees, catching small flies and mosquitoes in the air, and constantly spreading and raising its large fan-shaped tail. The male has a pleasant, short, tinkling song, sweet and clear. The Bengal name, 'Wheel *Dyal*' (*i. e. Copsychus saularis*), is given from its frequently turning round.

Sundevall remarks that its stomach is exceedingly thin, almost membranaceous.

292. **Leucocerca albofrontata,** FRANKL.

Rhipidura apud FRANKLIN, P. Z. S., 1831.—SYKES, Cat. 45—JERDON, Cat. 143—JERDON, Ill. Ind. Orn., pl. 2—BLYTH, Cat. 1242—HORSF., Cat. 189—*Shamchiri*, H. in the N. W.—*Macharya*, *i. e.* 'Mosquito-catcher,' H. in the South.—*Manati* (*i. e.* 'Washerman'), Mal.—*Dasari-pitta*, Tel.

THE WHITE-BROWED FANTAIL.

Descr.—Above, the head and neck deep black; a broad frontal band, extending over the eyes to the nape, pure white; back ashy-black; wings and tail dusky-black; the wing-coverts with some white spots; the tips of all the tail-feathers, except the central ones, broadly white: beneath, the chin and throat black, more or less spotted and lined with white; the breast and abdomen white.

Bill and legs black; irides deep brown. Length $7\frac{1}{2}$ inches; extent 10; wing $3\frac{3}{10}$; tail $3\frac{3}{4}$; bill at front 11 mill.; tarsus $\frac{7}{10}$.

The White-browed Fantail is found over all India, except Lower Bengal, extending to the foot of the Himalayas, only not towards the South-east. It is most common in Malabar and the Deccan, and is not rare in the N. W. Provinces and Scinde.

It occurs in the South, both in thin forest, and in groves, avenues, and gardens, in well-wooded districts; but is not so common in the Carnatic, as in the Deccan, where it may be seen in every clump of trees. In its habits it is very active and restless, continually flitting about from branch to branch, snapping up an insect on the wing, and raising its outspread tail and lowering its wings when it re-seats itself. It hardly ever flies more than a few feet after an insect, and seldom returns to the same perch, traversing in succession most of the branches of the tree, and rarely resting even during the heat of the day. It is usually solitary, occasionally two or three in company. I have several times seen it alight on the ground, and sometimes on the back of a cow, and pursuing flies from this rather unusual perch. Its chief food is mosquitoes and other small dipterous insects, also the small cicadellæ that are so abundant on every tree in India. It has a pleasing little song, which it warbles forth every now and then, consisting of several notes, following one another in a regular descending scale. I have had the nest brought me, very neatly made with fine roots lined with hair, deeply cup-shaped, and fixed in the fork of a bamboo. The eggs were white, with some rather large reddish-brown spots.

A very closely allied race or species exists in Ceylon, *L. compressirostris*, Blyth, which differs in the bill being not depressed but compressed, and in the white on the tail-feathers being less in extent. Another, slightly differing, exists in a new species from Upper Pegu.

293. **Leucocerca pectoralis**, JERDON.

J. A. S., XII., 935—JERDON, Cat. 144 (in part)—JERDON, Ill. Ind. Orn., letter-press to pl. 2—BLYTH, Cat. 1243.

THE WHITE-SPOTTED FANTAIL.

Descr.—Above, the whole head black, with a narrow white supercilium; the rest of the upper plumage brownish-dusky; wings dusky, the covers very slightly tipped with albescent; tail dusky,

all but the middle feathers passing gradually into dirty whitish towards their extremity: beneath, the throat and belly white; the under tail-coverts edged with rufous; the sides of the throat, and the whole breast, black, the middle of the latter marked with oval white spots.

Bill and feet black; irides dark brown. Length 7 inches; wing 3; tail 4, much graduated; bill at front 9 or 10 mill.; tarsus $\frac{3}{8}$.

This species differs from *L. fuscoventris* chiefly in the abdomen being white instead of dusky. I have only found it on the Neilgherries, at an elevation of 6,000 ft. or so, over the edges of the hills. It has the usual habits of the genus, and utters a feeble warbling song. It does not appear to have been procured elsewhere, but will probably be found to extend along some of the higher mountain ranges of the Malabar ghats.

L. javanica, found in Malayana, is very like this bird; and several other species are recorded from the islands as far as New Zealand. The species of *Rhipidura* are chiefly from Australia and the oceanic region; but Bonaparte, in his Conspectus, following Sol. Müller, gives three species from Java and Sumatra.

Gen. CHELIDORHYNX, Hodgson.

Syn. *Rhipidura* apud Blyth.

Char.—Bill short, broad, suddenly compressed at the tip, and much deflected, barely notched; nostrils covered by long and fine nareal bristles; gape with long rictal bristles; wings rounded, the first four quills graduated; tail long, rounded, firm; tarsus rather short; feet feeble, lateral toes slightly unequal.

This type, though nearly allied to *Leucocerca*, differs both from it and *Rhipidura* by its shorter bill, smaller size, and mode of coloration, and in this appears to lead the way towards *Cryptolopha*. There is only one recorded species, which, by its colors, small size, and social habits, may be said, in some measure, to tend to join the Flycatchers to the sylvan Warblers *Abrornis* and *Culicipeta*. The same remark may be made of *Cryptolopha*; and indeed Bonaparte places this last genus next to *Culicipeta*, and Swainson classed the typical species of the latter genus under *Cryptolopha*.

294. **Chelidorhynx hypoxantha**, Blyth.

Rhipidura apud Blyth, J. A. S., XII., 935—Blyth, Cat. 1239—Horsf., Cat. 191—C. chrysoschistos, Hodgson—*Sitte kleom*, Lepch.

The Yellow-bellied Fantail.

Descr.—Above, dusky ash-colour, tinged with green, especially on the head; toes and ears black; a bright yellow eye-streak continued across the forehead; tail conspicuously white-shafted, the inner edges of the feathers white-tipped, and the outer web of the outermost feather also white on its basal half; beneath, wholly bright yellow, paler towards the vent and under tail-coverts.

Bill black; legs reddish; irides pale brown. Length 4½ inches; extent 6; wing 2⅛; tail 2¼; bill at front 6 mill.; tarsus ½ inch.

This pretty little Fantail is found in Nepal, Sikhim, and Bootan. It affects high altitudes, being found near Darjeeling, from 6,000 to 8,000 feet and upwards. It frequents the skirts of large woods and low trees by the road-sides, either in pairs or small flocks; is very active and lively, making short sallies after insects, with a low pleasant twitter. I had the nest brought me, but after the young had flown. It is an exceedingly neat, deep cup-shaped nest, made of moss, lichen, hairs and wool, well carded into a compact structure. Blyth arranged this bird in *Rhipidura* from its near conformation, to *Rh. albiscapa* of Australia, which it resembles in its white-shafted tail-feathers.

Gen. Cryptolopha, Swainson.

Char.—Bill much as in the last genus, but not quite so wide; nareal bristles long and strong; rictal bristles a little shorter; wings with the 1st quill shorter, and the 3rd longer than in the last, the 4th and 5th very little longer; tail moderate, almost even; tarsus short; feet very feeble.

This genus differ from the last by its sub-crested head and shorter and nearly even tail. Like the last it is composed of only one species.

295. **Cryptolopha cinereocapilla**, Vieill.

Muscicapa apud Vieillot—Blyth, Cat. 1238—Horsf., Cat 192—C. poioicephala, Swainson, Nat. Libr. X, pl. 23—Jerdon,

Cat. 145—Platyrhynchus ceylonensis, SWAINS., Zool. Ill., N. S., pl. 13—*Zird phutki*, Beng.

THE GREY-HEADED FLYCATCHER.

Descr.—Above, the head, nape, and ear-coverts, dark ashy; back, wings and tail, light yellow-green; quills and tail-feathers dusky internally; rump and upper tail-coverts tinged yellow; beneath, the chin, throat, neck and breast, pale ashy; the rest of the lower plumage dingy yellow, greenish on the flanks.

Bill blackish above, horny-reddish beneath; feet dingy red; irides deep brown. Length $4\frac{1}{2}$ to $4\frac{3}{4}$ inches; wing $2\frac{3}{8}$; tail $2\frac{1}{8}$; bill at front 8 mill.; tarsus $\frac{1}{2}$ inch.

The Grey-headed Flycatcher is dispersed throughout all India, from the Himalayas to the Neilgherries, and spreads on the other side of the Bay through Assam into Arakan, Burmah and Tenasserim. The only locality in the South of India, where it is common, is on the summit of the Neilgherries. Towards the north, however, and in Central India, it is occasionally met with, and is not rare in Lower Bengal. In the plains, it is mostly a cold weather visitant.

It prefers rather dense jungle in general, or shady groves and tangled thickets; is tolerably active and lively, making frequent sallies after small insects, and not always returning to the same perch, but flitting about a good deal, though it usually remains in the same tree, or clump of trees, for some time. It is often seen in small parties, occasionally singly, or in pairs, and has a pleasant, but feeble, chirping song. Hutton obtained the nest at Mussoorie, at about 4,500 feet high, placed against the trunk of a large tree in the shape of a watch-pocket, made of moss, and fixed to the moss of the tree by spider's-web, and lined with fine stalks. The eggs, four in number, were dull white, with a faint olive tinge, and minutely spotted with pale greenish-brown, and a broad ring of the same near the larger end.

Near this genus should perhaps come the genus *Xanthopygia*, Blyth, with two or three species, one from Malacca and China, *X. tricolor*, Hartlaub (*leucophrys*, Blyth), another from China and Japan, *X. narcissina*, Temm. (*chrysophrys*, Blyth); and *X. mugimaki*, T., also from Japan.

Sub-fam. Muscicapinæ.

Bill depressed, moderately wide, slightly hooked and notched at the tip; rictal bristles moderate; wings moderate, more or less rounded; tail moderate; tarsus short, or slightly lengthened, moderately strong; feet small, or moderate, chiefly of small size.

This sub-family is composed of a considerable number of genera from the Old World and Australia, that agree in having a more or less depressed bill, short tarsi and feet, and which live on insects that they chiefly capture in the air, a few descending to the ground for a moment to pick one up, or snapping one off a leaf or twig. They differ from the last in their bill being less typical than in the *Myiagrinæ*, *i. e.* less depressed, smaller, and with the rictal bristles shorter.

In many the plumage of the young is more or less spotted, as in the young of the *Saxicolinæ* and the Thrushes; and Blyth and Horsfield remove them, the former completely, and the latter partially, from the Flycatchers, placing them in the series of Saxicoline birds. Gray, however, in his Genera, and Bonaparte in his Conspectus, retain them all in the *Muscicapidæ*, in which I quite agree with them. Most of the genera classed by the two last-named ornithologists in this family have the bill wider and more depressed than any of the *Saxicolinæ*, and their habits correspond to this; the Stonechats rarely capturing insects except on the ground. To remove some of them, merely because their young are coloured as in other groups, is, I think, taking too narrow a view; but that they grade to a certain extent into the *Saxicolinæ* I fully admit: still I prefer to keep them separate as a natural group. Of the extent of this sub-family, I cannot speak with precision. Gray, indeed, includes in it all of the last sub-family, and some American birds, such as *Setophaga* and its allies. Bonaparte, with more precision, excludes the American Flycatchers, and separates the *Myiagrinæ*, as we have already done, and divides the *Muscicapidæ* into two groups, *Muscicapeæ*, nearly confined to the Eastern Fly-catchers; and *Melanornitheæ*, subsequently raised to the rank of a sub-family under the name of *Monarchinæ*, for a group of Fly-catchers, chiefly from the oceanic region, Australia, and a few from Africa, and many with dark or black plumage.

I shall here follow Pr. Bonaparte's classification.

1. Muscicapeæ.

This division contains the genus *Butalis*, of which the Grey or Spotted Flycatcher of Europe is the type; also restricted *Muscicapa*, containing the Pied Flycatchers of Europe; and a considerable number of birds of plain brown and blue plumage, chiefly from India and Malayana, a few exhibiting a rufous tint on the breast and lower parts.

I shall commence the series with one genus, which, but for its shorter tail, might have been included among the *Myiagrinæ*.

Gen. Hemichelidon, Hodgson.

Char.—Bill much depressed and very shallow, wide at the base, slender and suddenly narrowed at the tip, and faintly hooked and notched; gape wide; nareal and rictal bristles rather short; wings long, reaching two-thirds of the length of the tail, 3rd and 4th quills sub-equal and longest, the 3rd slightly the longer of the two; 1st quill minute; tail moderate, rather short; tarsus short; feet small, with the lateral toes unequal.

This genus, in its most typical species, is indeed Swallow-like; the bill, as Hodgson remarks, being absolutely as in *Hirundo*, and, were its wings much longer, it might readily be mistaken for one.

296. Hemichelidon fuliginosus, Hodgs.

J. A. S., XVI., 119, and P. Z. S., 1845—Blyth, Cat. 1034—Horsf., Cat. 176—*Dang chim-pa-pho*, Lepch.

The Sooty Flycatcher.

Descr.—Above fuliginous-brown; wings and tail darker, paler beneath, and albescent towards the vent and lower tail-coverts, and slightly so on the throat.

Bill blackish above, yellow at the base of the lower mandible; legs dusky-brown; irides deep brown. Length 4½ inches; wing 2¾; tail 1¾; bill at front 8 mill.; tarsus not ½ inch.

This bird has very much the aspect of a Swallow, both in color and structure. It is found throughout the Himalayas, is common about Darjeeling from 6,000 feet upwards; is sedentary in its

habits, darting on insects from a fixed perch on a low branch. I never saw it descend to the ground to feed. It extends also to China, Mr. Swinhoe remarking that it "straggles to Amoy in its vernal migrations." This makes it the more probable that the following bird of Pallas is the same.*

The next two species have usually been classed under *Hemichelidon*; but have of late been separated as *Alseonax*, Cabanis, and I think with some reason, so shall adopt that name.

Gen. ALSEONAX, Cabanis.

Somewhat resembling *Hemichelidon*, but the bill is more lengthened and narrower in front, less Swallow-like, and much deeper vertically; the 1st primary is proportionally larger, and the wing is less pointed; the 3rd and 4th quills about sub-equal, the quills diminishing in length less rapidly; the rictal bristles are perhaps longer and stouter.

297. Alseonax latirostris, RAFFLES.

Muscicapa apud RAFFLES—M. poonensis, SYKES, Cat. 42—JERDON, Cat. 154—BLYTH, Cat. 1033 (in part)—and HORSF., Cat. 177 (in part)—Butalis ponticeriana, GMEL, apud LICHT. and BONAP.—*Zakki*, H.

THE SOUTHERN BROWN FLYCATCHER.

Descr. Above light brownish-grey, beneath white, tinged with very pale ashy on the breast, sides of throat, and flanks; eyelids conspicuously white.

Bill dusky-yellow at the gape and at the base beneath; irides deep brown; legs brown. Length $5\frac{1}{2}$ inches; wing $2\frac{6}{8}$ to 3; tail 2; bill at front 11 mill.; tarsus $\frac{9}{16}$ths.

This and the next species have usually been considered the same; but I think that they differ in species, and our bird is most probably *B. ponticeriana*, as quoted above, which is given next to and distinct from Hodgson's bird in Bonaparte's *Conspectus*. In this case *ponticeriana* would stand as the specific name.

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* *Muscicapa fuscedula* of Pallas is undoubtedly a second species of this genus, as restricted, if indeed it be not the same. The coloring appears to be identical; but the measurements given make it a rather larger bird.

The bird from Southern India is larger, much more grey in its tints and having hardly any rufescent, and whiter beneath; the eyelids too are more prominently white, and the yellow of the bill is more marked.

It is found throughout Southern India and Ceylon, perhaps also extending to the North. It is enumerated as from China, *J. A. S.* 1859, p. 280. It frequents alike thin forest-jungles, and groves and gardens. It is very sedentary, sitting motionless on a branch, and darting out occasionally to capture an insect on the wing. It is said only to be a winter visitant in Ceylon, but I cannot say for certain if it remains and breeds in Southern India or not.

298. **Alseonax terricolor,** Hodgson.

Butalis apud Hodgson and Bonap., Consp.

The Rufescent-brown Flycatcher.

Descr.—Above greyish-brown, tinged more or less with rufescent, and the wing-coverts and tertiaries margined with the same colour; beneath white; the breast, sides, throat, and flanks, tinged with greyish-brown.

Bill dusky-yellowish at the base; irides dark brown; legs dusky-brown. Length about 5 inches; wing $2\frac{3}{4}$; tail 2; bill at front 10 mill.; tarsus $\frac{1}{2}$.

This Flycatcher is found in the Himalayas, at no great elevation, extending into the plains in the cold weather. I believe that it extends into Central India, but I am not certain if it is found in the South or not. Blyth has obtained it in the neighbourhood of Calcutta.

299. **Alseonax ferrugineus,** Hodgs.

Hemichelidon apud Hodgson—Blyth, Cat. 1035—Horsf., Cat. 175—Butalis rufescens, Jerdon, Blyth, J. A. S., XVI., 120—Butalis Mutui, Layard—*Dang chim-pa-pho,* Lepch.

The Ferruginous Flycatcher.

Descr.—Above rusty-brown, passing to olivaceous on the head and neck, deeper ferruginous on the upper tail-coverts and edges of the tail-feathers; wing-coverts and tertiaries edged with pale rufous;

quills and tail-feathers internally dusky-blackish, the former more or less so apertly beneath; the throat and fore-neck white; sides of the throat brown; the rest of the lower parts yellowish-brown, somewhat albescent on the middle of the belly; the flanks, vent, and under tail-coverts being ferruginous.

Bill dusky, fleshy-yellow at the base beneath; legs pale whitish-fleshy; irides dark brown.

Length about 5 inches; wing $2\frac{3}{4}$; tail 2; bill at front 9 mill.; tarsus $\frac{1}{2}$.

This Flycatcher has been found in Nepal and Sikhim; occasionally straggling to the plains in the cold weather. It has, however, been also found in Ceylon, and extends to China. I obtained one specimen at Nellore in the Carnatic in March. It must be a very rare visitant to the plains, for I have not heard of any others being procured away from the Himalayas. It is very common in the neighbourhood of Darjeeling, at an elevation from 4,000 feet upwards to 8,000 feet; it frequents dark open forests without underwood, and pursues insects from a low branch, or the fallen stump of a tree. Hodgson says that it has a better and more continuous flight than Flycatchers in general. I certainly did not observe this.

Of Flycatchers allied to *Hemichelidon* and *Alseonax*, there is *Butalis*, containing the European Grey or Spotted Flycatcher, *B. grisola*, L., with several African species; also, in addition to those named from India, *B. cinereo-alba*,* T. and Schl., from Japan; *B. gularis*, T. and S., also of Japan, of which Bonaparte remarks that it is scarcely of this genus; and *Hemichelidon rufilata*, Swinhoe, from China. This approximates *Alseonax ferruginea*, and, I may remark, shows a tendency in its coloration to *Ochromela*.

The next bird I shall place in the list is a somewhat anomalous form of Flycatcher, in which the ferruginous color of the last bird is repeated with increased intensity; and it is moreover remarkable as being the only generic form peculiar to Southern India (with Ceylon).

* Swinhoe considers this the same as *latirostris* of Raffles.

Gen. OCHROMELA, Blyth.

Char.—Bill moderate, rather feeble, moderately wide, depressed, narrowing at tip, slightly hooked and notched, the nareal and rictal bristles long but weak; wings moderate, much rounded; 4th quill longest; tarsus slightly lengthened; feet moderate, lateral toes sub-equal.

Mr. Blyth, the founder of the genus, considered it nearly allied to *Cyornis*; but with the Flycatcher bill more pronounced: it is nearly related to *Siphia tricolor*, the rictal vibrissæ being longer and the tarsi longer; and also to *Anthipes*.

300. Ochromela nigrorufa, JERDON.

Saxicola apud JERDON, Cat. 107—Musc. rufula, LAFRESNAYE—BLYTH, Cat. 1021—HORSF., Cat. 445.

THE BLACK AND ORANGE FLYCATCHER.

Descr.—Head, face, back of neck, and wings, dusky black; the rest of the body bright ferruginous or orange, somewhat paler on the belly. The female has the black of the male dusky-brown, and the rufous less bright.

Bill black; legs dirty reddish; irides hazel-brown. Length nearly 5 inches; wing $2\frac{1}{2}$; tail 2; bill at front 9 mill.; tarsus nearly $\frac{8}{10}$.

This remarkably-plumaged Flycatcher has hitherto only been found on the summit of the Neilgherries and highest mountains of Ceylon. It frequents the dense woods there, preferring the most retired, shady and damp, swampy spots. Here it may be seen seated motionless on the low branch of a tree, or a fallen stump, or some thick tangled dead branches, every now and then making a short swoop at an insect in the air, or descending to the ground for a second to pick one up. It is a very silent bird, and I never heard its note.

The coloration of this bird is quite unique; and perhaps an approach to it is seen (with the substitution of rich yellow for orange) in *Tarsiger chrysæus* of the Himalayas.

Gen. Eumyias, Caban.

Syn. *Stoparola*, olim, Blyth—*Hypothymis*, apud Horsf., Cat.

Char.—Bill short, depressed, perfectly triangular, short, much hooked at the tip; rictal and nareal bristles moderate; wings rather long, 3rd, 4th and 5th quills sub-equal; tail moderate, even; tarsus short, stout; feet short, lateral toes nearly equal.

This genus has of late been subdivided; but I will, in this case, not adopt the subgenera, but place them as sections.

1st. *Glaucomyias*, Cabanis.

This is established for the *Musc. melanops*, and one or two allied species. It differs from *Eumyias* by its paler colour, and by wanting the white at the base of the tail; and the bill is perhaps a little shorter.

301. **Eumyias melanops**, Vigors.

Muscicapa, apud Vigors, Blyth, Cat. 1026—Horsf., Cat. 451—Jerdon, Cat. 151—Sykes, Cat. 40—Gould, Cent. Him. B., pl. 6—M. lapis, Lesson—M. thalassina, Swains.—*Nil kat-katia*, Beng.—*Sibyell-pho*, Lepch.

The Verditer Flycatcher.

Descr.—Plumage generally verditer-blue, brightest on the forehead, sides of head, chin, throat and breast, also on the rump and upper tail-coverts; dull on the back of the neck and interscapulars; lores black; quills dusky internally, dull blue externally; tail greenish-blue.

The female has the colours less bright. Bill black; legs black; irides deep brown. Length 6 inches; wing $3\frac{5}{10}$; tail $2\frac{3}{4}$; bill at front 9 mill.; tarsus barely $\frac{5}{8}$.

The Verditer Flycatcher is found throughout India, from the Himalayas to the Neilgherries, visiting the plains during the winter, and is generally spread throughout the better wooded parts of the country, though numerically rare, especially in the south of India. It extends to China and Burmah. It is very common at Darjeeling, generally pursuing insects from a tolerably high branch, rarely descending to the ground, and generally returning

to the same perch. It breeds at Darjeeling, occasionally in the eaves of houses, but generally on a bank; makes a neat nest of moss, lined with black fibres and hair, and has generally four eggs, dull white, with small rufous spots. The male has a very pleasing song, which, as Hutton remarks, he usually pours forth from some high exposed twig.

A nearly allied species occurs in Malayana, *E. thalassina*, Temm.; smaller, with the bill still broader, the wings and tail shorter, and the blue deeper.

2nd. *Eumyias.*

This section has some white at the base of the tail, the colour is deep blue, and the bill is somewhat more lengthened than in the preceding section.

302. **Eumyias albicaudata**, JERDON.

Muscicapa apud JERDON, Cat. 152—JERDON, Ill. Ind. Orn., pl. 14—BLYTH, Cat. 1029—HORSF., Cat. 450.

THE NEILGHERRY BLUE FLYCATCHER.

Descr.—Of a deep indigo-blue color, inclining to lazuline on the forehead, head, and shoulders; wings and tail dusky-black, the feathers edged with blue, and those of the tail, the two central feathers excepted, white at their base; belly ashy-blue, mingled with whitish; under tail-coverts whitish, barred with dusky blue.

Bill black; legs black; irides deep brown. Length $6\frac{1}{2}$ inches; extent $9\frac{1}{2}$; wing $3\frac{2}{10}$; tail $2\frac{5}{10}$; bill at front 9 mill.; tarsus $\frac{7}{10}$.

The female differs in being more dingy and greyish-blue, and the pale blue markings are less distinct.

This Flycatcher, as far as we know at present, is confined to the summit of the Neilgherries; it will, however, probably be found on some of the other high mountain ranges of Southern India, such as the Pulneys, Animullies, &c. It is very common on the Neilgherries, generally in parties of five or six, capturing insects in the air, and is often in a state of continual motion, taking short darts and gambols in the air, as much in sport apparently, as in actual pursuit of insects.

It makes its nest in a slight hole in a bank, and the eggs are white with small reddish spots. A nearly allied species occurs in Java, *E. indigo*, Horsf.

A nearly allied form to this is *Musc. cyanomelana* of Temminck, from Japan, of which Blyth makes his genus *Cyanoptila;* but it more resembles some of the *Muscicapulæ* in its coloring.

Gen CYORNIS, Blyth.

Syn. *Synornis*, Hodgs.

Char.—Bill feeble, somewhat lengthened, not very wide at the base, tapering, suddenly narrowing and well hooked at the tip; rictal bristles moderate, feeble; nareal bristles rather long; wings moderate, 3rd quill a little shorter, 4th and 5th quills sub-equal and longest; tail moderate, nearly even; tarsus moderate, slender; lateral toes nearly equal, middle toe long.

This genus was proposed by Mr. Blyth, J. A. S., XII., 940, for a very natural group of Flycatchers, peculiar to India and Malayana, most of which are blue above, with a rufous breast, and the females differ in being brown above.

I shall commence this group by one whose colors closely resemble those of *Eumyias*, and which perhaps ought strictly to form a section in that genus.

303. **Cyornis unicolor**, BLYTH.

J. A. S., XII., 1007—BLYTH, Cat. 1016.

THE PALE BLUE FLYCATCHER.

Descr.—Above light blue, approaching to verditer; forehead, over the eye, and shoulder of the wing, pale smalt-blue; beneath paler blue, inclining to albescent below the breast; axillaries light rufescent, with a tinge of the same on the lower tail-coverts.

Bill and legs black. Length $6\frac{3}{4}$ inches; wing $3\frac{1}{8}$; tail 3; bill at front 13 mill.; tarsus $\frac{5}{8}$.

This bird, though it has much the bill of a *Cyornis*, has the tarsus shorter. It has a great resemblance in its colors to *Eumyias melanops*, and has only as yet been procured in Sikhim. I did not myself obtain it, when at Darjeeling; but might easily have overlooked it in the woods, from its likeness to the species abovementioned.

304. **Cyornis rubeculoides**, Vigors.

Phænicura apud Vigors, P. Z. S., 1831—Gould, Cent. Him. B., pl. 25, f. 1—Blyth, Cat. 1017—Horsf., Cat. 446—Niltava brevipes, Hodgson—Musc. rubecula, Swains. (the female).—*Chatki*, Beng.—*Manzhil-pho*, Lepch.—

The Blue-throated Redbreast.

Descr.—Male—The head, neck, and body above, dark blue; forehead, and shoulder of the wing, bright pale blue; lores, ear-coverts, and frontal plumes, black; inner webs of quills, and of the tail-feathers (and the whole under surface of these), dusky-black; throat dark blue; neck and breast bright rufous; abdomen white.

The female is olive-brown above, with a rufous breast and white belly.

Bill black; legs brown; irides dark brown.

Length $5\frac{3}{4}$ inches; extent 9; wing $2\frac{7}{8}$; tail $2\frac{1}{4}$; bill at front 12 mill.; tarsus $\frac{11}{16}$. I know not what induced Bonaparte to class this bird along with the stout-legged *Ruticilla cæruleocephala*, under his genus *Adelura*.

It is found throughout the Himalayas, visiting the plains of India in the cold season, and extending into Arakan and Tenasserim. It is rare in the south of India, but I have procured it both on the East and Western coast. It is tolerably common about Calcutta in the cold weather. I saw it frequently near Darjeeling, at from 4,000 to 6,000 feet of elevation. It usually sits quietly on a low branch, captures a few insects on the wing, and then moves off to another tree. Hutton obtained the nest at Mussooree, in holes of banks, and in clefts of rocks, made of moss lined with black fibres, and with four or five pale olive-green eggs, indistinctly clouded with dull rufous. The male has a pleasing song, which he warbles forth from the midst of some bush.

305. **Cyornis banyumas**, Horsf.

Muscicapa apud Horsfield, Zool. Res. Java, pl.—Blyth, Cat. 1018—Horsf., Cat. 447—Jerdon, Cat. 150—Sykes, Cat. 41—M. rufigastra, Raffl.—M. cantatrix, Temm., Pl. Col. 226.

Horsfield's Blue Redbreast.

Descr.—Above, rather dull dark blue; forehead, and streak over eye, pale bright blue; lores and ear-coverts black; beneath, the chin just at the base of the bill black; the rest of the chin, throat, and breast, yellow ferruginous, passing to white on the middle of the abdomen, and the under tail-coverts pure white; flanks slightly fulvescent.

The female probably differs in being olive-brown above.

Bill black; legs brownish; irides deep brown. Length $5\frac{3}{4}$ to 6 inches; extent 9; wing $2\frac{8}{10}$; tail $2\frac{4}{10}$; bill at front .11 mill.; tarsus nearly $\frac{8}{10}$.

Horsfield's Blue Redbreast appears to be sparingly spread through the plains of India, being most common towards the South, where it appears to replace *C. rubeculoides.* I have procured it in the Carnatic, on the Malabar coast, in the Deccan (where Sykes also obtained it), and in Goomsoor; and Mr. Blyth has recently got one specimen from the neighbourhood of Calcutta: it also extends to Java; but has not as yet been sent from the Himalayas, nor from the Burmese provinces. It is one of the few birds of this family that is found equally on the continent of India and Java; and were it not that Horsfield had his own specimens to compare with Col. Sykes's, I should have been inclined to doubt their being specifically the same.

This Redbreast frequents alike open forest, and groves and gardens, feeding from a fixed perch, and catching its prey usually on the wing; but I have seen it descend to the ground to pick up insects.

At one time I was inclined to think that *M. rubecula* of the Supplement to my Catalogue might have been the female of this; but am now led to believe it to be the same as *C. ruficauda.*

306. **Cyornis Tickelliæ, Blyth.**

J. A. S., XII, 941—Blyth, Cat. 1019—Musc. hyacinthina, Temm. apud Tickell.

Tickell's Blue Redbreast.

Descr.—Above dull greyish-blue, brighter on the forehead, shoulders of the wings, and upper tail-coverts; chin white, tinged with

fulvescent; throat and breast light ferruginous; belly albescent; under tail-coverts pure white; bill blackish; legs pale.

Length $5\frac{3}{4}$ inches; wing $2\frac{3}{4}$; tail $2\frac{1}{2}$; bill at front 10 mill.; tarsus $\frac{5}{8}$.

This species differs from the last in the duller and more grey tints of the upper plumage, and the paler hue of the lower surface; the rufescent medial portion of the throat is wider, too, than in the last bird. Its colouring recalls that of some of the Australian *Myiagræ*.

Tickell's Blue Redbreast has only as yet been procured in Central India, and by that naturalist. He found it rare, silent, frequenting high trees in Borabhum.

307. **Cyornis ruficauda**, Swains.

Muscicapa apud Swainson—J. A. S., XVI., 120—C. æqualicauda, Blyth, J. A. S., XX., 523—Musc. rubecula, Swains., apud Jerdon, Suppl. Cat., 154 bis.

The Rufous-tailed Flycatcher.

Descr.—Above, olivaceous-brown; rump and upper tail-coverts ferruginous, and the tail bright dark ferruginous, the middle pair suffused with dusky, and the outer webs of the others also sullied with fuscous; beneath, the chin whitish, the rest of the plumage below pale greyish-brown, passing to white on the abdomen and under tail-coverts, which last are faintly tinged with ferruginous; bill dusky; irides deep brown.

Length $5\frac{1}{2}$ inches; wing $2\frac{7}{8}$ to 3; tail $2\frac{1}{4}$; tarsus $\frac{5}{8}$.

Such is the coloring of two specimens procured, the one in the Himalayas, in Kumaon and Kunawar, the other near the extreme South of India, at Nellore in the Carnatic. I am strongly inclined to suspect the identity of these with my *M. rubecula*, referred to above, shot on the Coonoor pass of the Neilgherries, of which the following is a description:—

Head and neck greenish-cinereous; back olivaceous; upper tail-coverts and tail bright cinnamon-rufous; throat and breast, orange; abdomen and under tail-coverts, white.

Bill black; legs fleshy brown; irides dark brown. Length 6 inches; wing 3; tail $2\frac{4}{10}$; bill at front rather more than $\frac{4}{10}$.

Two or three of the feathers on the forehead were pale blue, which shewed that it would probably have become quitu blue above. It appeared to me at the time to differ from *C. banyamas* by a slightly longer bill and some other trifling differences. If my suggestion be correct, that it is the same bird as *C. ruficauda*, the rufous breast may, in this species, be the mark of the male only, and the birds described as *ruficauda* and *æqualicauda* might be females. If *rubecula* be eventually proved to be the same, the adult male is probably blue above, as in the others of this genus.

There remain two birds to be included in this genus, which differ from the previous species by their larger and stronger bills, and they might perhaps form a separate section. The one is allied in its coloring to *Muscicapula*, and the other (which is probably a female) has the usual coloring of that sex of *Cyornis*. They are each known at present from a single specimen.

308. **Cyornis magnirostris**, Blyth.

J. A. S., XVIII., 814—Blyth, Cat. 1020.

THE LARGE-BILLED REDBREAST.

Descr.—Above brown, darker and less tinged with tawny than the female of *rubeculoides*; wings and tail inclining to ferruginous, and a very conspicuous ring of rufescent feathers round the eye; beneath bright ferruginous, paler on the throat, and pure white on the belly and lower tail-coverts; the flanks brown.

Bill dusky; legs pale whitish. Length 6 inches; wings 3; tail $2\frac{1}{4}$; bill at front 13 mill.; tarsus $\frac{3}{4}$.

This bird is colored very much like the female of *C. rubeculoides*; but the bill is much larger and more robust, almost indeed *Tephrodornis*-like. It was procured at Darjeeling.

309. **Cyornis pallipes**, Jerdon.

Muscicapa apud Jerdon, Cat. 149.

THE WHITE-BELLIED BLUE FLYCATCHER.

Descr.—Entirely of a deep indigo-blue, except the belly and under tail-coverts which are white; wings and tail dusky on their inner webs.

Bill black; irides deep brown; legs, feet and claws, pale whitish flesh-color. Length $6\frac{1}{2}$ inches; wing $3\frac{1}{10}$; tail $2\frac{1}{2}$; bill at front nearly $\frac{1}{2}$; tarsus nearly $\frac{8}{10}$. The 5th and 6th quills are sub-equal and longest, and the tail is nearly quite even.

I only once obtained a specimen of this Flycatcher on the Coonoor pass of the Neilgherries, at about 4,000 feet of elevation, where I observed it darting on insects from its perch on a low branch. It is probably, however, an inhabitant of the upland forests along the Western Ghats; for I possess a drawing by Mr. Ward of this species shot near Sirci, above Honore.

Other species of *Cyornis* are *C. hyacinthina*, Tem., from Timor, and *C. elegans*, T., from Sumatra.

Gen. MUSCICAPULA, Blyth.

Bill feeble, depressed, moderately wide at the base, gradually narrowing and triangular, very slightly hooked and notched at the tip; nareal and rictal bristles rather short; wing moderate, 3rd and 4th quills sub-equal; 5th very little shorter; tail moderate; tarsus slender, slightly lengthened; toes unequal, middle toe somewhat lengthened.

This genus may be said to be intermediate to *Cyornis* and *Siphia*, being distinguished from the former, which the species resemble in color, by the narrower bill, and from the latter by their somewhat more feeble tarsi and toes.

310. **Muscicapula superciliaris**, JERDON.

Muscicapa apud JERDON, Cat. 153—BLYTH, Cat. 1014—HORSF., Cat. 458—Dimorpha albogularis, BLYTH, HORSF., Cat. 461—JARDINE, Contr. Orn., pl.,—M. hemileucura, HODGS.—HORSF., Cat. 459—Larvivora, No. 117, ADAMS, Birds of Cashmere.

THE WHITE-BROWED BLUE FLYCATCHER.

Descr.—Above, and the sides of the head, full Prussian-blue, some of the feathers of the rump with the shaft, and a bar in the middle

of the feather, white; wings and tail black, edged with blue; and the base of the tail-feathers, except the centrals, white; a broad superciliary stripe extending to some distance behind the eyes, and the plumage beneath, snowy-white; a band of blue extending from the sides of the neck more or less across the sides of the breast.

Bill black; legs brown; irides deep brown. Length $4\frac{1}{4}$ inches; wing 2; tail $1\frac{8}{10}$; bill at front 9 mill.; tarsus $\frac{9}{16}$th; the 4th quill is longest, 3rd and 5th sub-equal.

This pretty little Flycatcher is found throughout the Himalayas, spreading to the plains of India in the cold weather; but it appears to be by no means a common bird anywhere. I procured but one specimen, at the edge of the Northern Ghats near Ajunteh, and I did not obtain it in Sikhim. Horsfield gives the *Dimorpha albogularis*, Blyth, and *Muscicapa hemileucra*, Hodgson, as distinct; but Mr. Blyth joins them both, in which I follow him.

311. **Muscicapula æstigma**, Hodgson.

Muscicapa apud Hodgson—Gray, Cat. Nepal Birds, App., p. 155—Horsf., Cat. 460.

The Little Blue-and-White Flycatcher.

Descr.—Upper surface blue; wings and tail black, margined with blue; under surface entirely pure white. Length $4\frac{1}{4}$ inches; wing $2\frac{1}{4}$; tarsus $\frac{6}{12}$.

This species, if really distinct from the last, appears to differ by wanting the white at the base of the tail. From Nepal.

312. **Muscicapula sapphira**, Tickell.

Blyth, J. A. S., XII., 939—Blyth, Cat. 1015—Horsf., Cat. 456—Jerdon, Ill. Ind. Orn., pl. 32.

The Sapphire-headed Flycatcher.

Descr.—Above rich dark purplish-blue, inclining to smalt-blue on the rump and upper tail-coverts; forehead and crown pale azure or sapphirine blue, deepening on the hind-head; lores black; fore-neck and breast rich purple, with a broad medium line of deep and bright ferruginous; flanks greyish; belly, and fore part of

the wings underneath, with the axillaries, white; quills and tail black, edged with blue externally.

Bill black; feet brown; irides dark brown. Length $4\frac{3}{4}$ inches; wing $2\frac{1}{2}$; tail $1\frac{7}{8}$; bill at front 9 mill.; tarsus $\frac{9}{16}$.

The female has the head, neck, and interscapulars, plain olive-brown; forehead, lores, and round the eyes, ferruginous; wings, rump, and tail, deep blue; throat, fore-neck and breast, bright ferruginous, much broader than in the male; belly and lower tail-coverts bluish-white.

This beautiful Flycatcher has only been found in Nepal and Sikhim, where first discovered by Captain Tickell. It is somewhat rare at Darjeeling; for I only obtained one female there, which I shot at about 6,500 feet of elevation, in open forest, perching high up, and capturing insects on the wing.

Gen. Nitidula, Blyth.

Char.—Bill much less wide than in *Muscicapula*, straight, moderately depressed, compressed at the tip, which is slightly deflected; nareal and rictal bristles much as in *Muscicapula*; wings rounded, the 3rd quill shorter than the 4th, which is longest; tarsus as in *Muscicapula*.

This genus may be looked on as a *Muscicapula*, with a more slender bill, and the wings slightly more rounded. It is the most minute form in this family.

313. **Nitidula Hodgsoni**, Moore.

Nemura apud Moore, P. Z. S., 1854, p. 3, pl. 62. N., Campbelli, Jerd. and Blyth, P. Z. S., 1861, 201.

The Pigmy Blue Flycatcher.

Descr.—Above, rich dark blue, bright ultramarine on the head; wings and tail black, the latter edged blue; lores and ears black; beneath, light ferruginous, paling on the belly, and white on the under tail-coverts; wings white within.

Bill black; legs pale reddish; irides dark brown. Length $3\frac{3}{4}$ inches; wing $1\frac{7}{8}$; tail $1\frac{1}{4}$; extent $5\frac{1}{2}$; bill at front 8 mill.; tarsus $\frac{1}{2}$.

I procured two or three specimens of this, the most diminutive, as it is one of the most beautiful, of the group, whilst at Darjeeling, between 5,000 and 7,000 feet of elevation.

As it has none of the characters of *Nemura*, it was not till the figure in the Illustrated P. Z. S. was seen, that Mr. Blyth and myself recognised its identity with Moore's bird.

The next genus on the list is remarkable for the peculiar coloring of both sexes, and for the comparatively large size of one of the species, so much so, that had it been the sole representative of its kind, I would have hesitated classing it among the Flycatchers, and, taking its very slightly depressed bill into consideration, would have placed it perhaps among the Thrushes. One of the three known species, however, is of small size, and has the bill more depressed and Flycatcher-like.

It is nearly confined to the Himalayan region, though two of the species extend into the Burmese Provinces.

Gen. NILTAVA, Hodgson.

Bill rather short, stout, very little depressed at the base, compressed towards the tip, which is much deflected and strongly notched; nostrils concealed by the frontal plumes and a few bristles; rictal bristles small and weak; wings moderate or rather long, rounded, the first four quills unequally graduated, 5th longest; tail moderate, even, or very slightly rounded, tarsus rather short or moderate; feet moderate, lateral toes unequal, middle toe lengthened.

In this genus, instituted by Hodgson, the males are black, above more or less overlaid with rich blue, and have a bright blue neck-spot; whilst the females are pale brown, with the neck-spot lilac. In their habits they are more terrestrial than most of the Flycatchers. The three species comprising this genus form, each as it were, a separate section.

314. **Niltava sundara**, HODGSON.

Ind. Rev. 1, p. 650—BLYTH, Cat. 1023—HORSF., Cat. 442—Chaitaris sordidus, HODGS. (the young)—Cyanecula fastuosa, LESSON—*Niltau*, Nep.—*Margong*, Lepch.

The Rufous bellied Fairy Blue-chat.

Descr.—Male, above, the forehead, lores, ear-coverts, hind-neck, and upper back, deep black; top of the head, nape, neck-spot, shoulder of wing, lower back, rump, and upper tail-coverts, glistening smalt-blue; wings black, the quills edged with dull blue; tail dark blue on the outer webs, black internally; beneath, the chin and throat are deep black, with a blue smear; the rest of the lower parts deep bright ferruginous, paling somewhat on the lower abdomen and under tail-coverts.

Bill black; legs brown; irides dark brown. Length $6\frac{1}{4}$ inches; extent 10; wing $3\frac{1}{4}$; tail $2\frac{3}{4}$; bill at front 11 mill.; tarsus $\frac{7}{8}$.

The female is light olivaceous-brown above; the wings dusky, edged with ferruginous, and the tail dull ferruginous; beneath pale ashy-brown, with a lavender-blue spot on each side of the neck.

This very beautiful bird is, as far as we know, confined to the Himalayas. It is very common about Darjeeling, from 5,000 feet to 8,000 feet. It frequents thick bushy ground, often near water, is shy and wary, seldom showing itself, but now and then I have seen it seated on a fallen tree, or stump, or even a paling by the way-side. It feeds chiefly on insects which it procures on the ground, generally returning to the same perch whence it came, but it also picks insects off the leaves and branches. It is seldom seen high up on trees. Hodgson says that it sometimes eats berries and seeds in winter. I several times procured the nest of this bird, situated on a bank, or in the cleft of a rock, or against the fallen stump of a tree. It is loosely made of moss, lined with a few black fibres; and the eggs, three or four in number, are reddish-white, with the large end nearly covered with minute brick-red spots, forming a large patch of dull brick-red. The eggs are remarkably long-shaped.

The song is said to be one loud and simple note, frequently repeated. I have not heard it, that I am aware of, and always considered it a very silent bird.

315. **Niltava Macgrigoriæ,** Burton.

Phænicura apud Burton, P. Z. S., 1835—Blyth, Cat. 1024—Horsf., Cat. 444—N. fuligiventer, Hodgs.—Leiothrix signata, McLelland, and Dimorpha auricularis, Hodgs. (the female)—*Phatt-tagrak-pho,* Lepch.

The Small Fairy Blue-chat.

Descr.—Male, above, rich dark violet-purple; the forehead and neck-spot brilliant ultramarine; wings black, with a faint edging of blue; tail dark blue on the outer webs, black internally; beneath, the neck and breast dark violet-blue; abdomen fuliginous-ashy, passing into white towards the vent.

The female is plain olivaceous-brown above, lighter beneath, with the neck patch of light lavender-blue.

Bill black; legs reddish-black; irides dark brown. Length 5 inches; wings $2\frac{1}{2}$; tail 2; bill at front not quite 9 mill.; tarsus nearly $\frac{5}{8}$.

This lovely little bird approaches *Muscicapula* and *Siphia* in the form of its bill, which is more Muscicapine than that of the other two species, *i. e.* wider and more depressed, and with both nareal and rictal bristles more developed, and it resembles *Anthipes* in the proportions of the quill-feathers, in which the 4th, 5th, and 6th primaries are sub-equal and longest. It inhabits the whole extent of the Himalayas, being common at Simla, according to Lord A. Hay, and extending into Assam. About Darjeeling it is not rare, and is chiefly found at an elevation from 3,000 to 5,000 feet. It captures insects usually on the wing, but also seizes them on the ground, from its perch on a low shrub. Its Lepcha name is the same as that given to *Anthipes* and *Siphia*; and, as will be seen from the synonyms given, Hodgson himself named the female *Siphia* (*Dimorpha*) *auricularis*, thus announcing its affinity for that group.

The next species has the bill still less compressed than the other two, and much stouter vertically; and Hodgson has placed it as the type of another genus, *Bainopus*.

316. Niltava grandis, Blyth.

J. A. S., XI, 189—Blyth Cat. 1022—Horsf., Cat. 443—Bainopus irenoides, Hodgson, Gray, Misc.—*Margong*, Lepch.

The Large Fairy Blue-chat.

Descr.—Male, above, glossy dark purple; the forehead, lores, cheeks and ear-coverts, deep black; the crown, large neck-spot, shoulders of wings, and rump, brilliant lazuline; beneath, the throat and breast, deep black; abdomen empurpled-black, passing into dull black or ashy on the vent and lower tail-coverts; wings and tail black beneath.

The female is olivaceous-brown above; the head and nape are tinged with cinereous; the forehead and lores are dusky-ferruginous, and rufous on the back, rump, and tail; neck patch on each side shining ultramarine, with a faint fulvescent mark between the two neck-patches; beneath, the chin and throat are pale rufescent, the rest of the body beneath pale brown, whitish towards the vent.

Bill black; legs reddish black; irides dark brown. Length $8\frac{3}{4}$ inches; wing $4\frac{1}{4}$; tail 4; bill at front $\frac{3}{4}$; tarsus nearly 1; extent, $12\frac{1}{2}$.

The young male is blackish, with dark ferruginous spots; and is very Meruline in its appearance.

This handsome bird has been chiefly found in the Eastern Himalayas, in Nepal and Sikhim, but extends into Tenasserim. It is very common about Darjeeling, preferring a lower zone to *N. sundara*, viz., from about 4,000 to 6,000 feet or so. It is still more shy and retired in its habits than that species, frequenting thick shady glens, especially near water, and feeding much on the ground on various insects. Its nest is very like that of *sundara*, being loosely made of moss, and placed in similar situations, and the eggs only differ in their larger size; when the nest is placed on the cleft of a rock, the shape of the nest is accommodated to it, so that I have seen the nest shaped like a parallelogram, long, quite flat on the sides, and the two ends just slightly rounded. I never heard the note of this species.

The coloring of this bird somewhat recals that of *Irena;* but still more, perhaps, that of *Myiophonus*.

Gen. ANTHIPES, Blyth.

Char.—Bill depressed, moderately wide at the base, slightly hooked and strongly notched at the tip; nostrils linear, basal; gape with a few fine vibrissæ; wings moderate, rounded; 4th, 5th and 6th quills sub-equal and longest; tail moderate, nearly even; tarsus slender, slightly lengthened; lateral toes nearly equal; middle toe very long; the hind-claw very large; all the claws long and very slightly curved.

"This genus," says its founder, "combines the bill of a Flycatcher, the aspect of a *Pratincola*, and the feet of a Pipit." It is nearly related to *Niltava*, as shewn by its coloration compared with that of the female *Niltava*, and it was indeed described by Hodgson as the supposed female of *Niltava Macgrigoriæ*.

317. **Anthipes moniliger**, HODGSON.

Dimorpha apud HODGSON, P. Z. S., 1845—Niltava fuligiventer, fem., HODGSON—A. gularis, BLYTH, J. A. S., XVI, 122—BLYTH, Cat. 1012—*Phatt tagrak-pho*, Lepch.

The WHITE-GORGETED FLYCATCHER.

Descr.—Above, fulvescent olive-brown, becoming ferruginous on the back and upper tail-coverts; wings and tail inclining to dark ferruginous; lores conspicuously whitish or fulvescent, continued as a streak over the eye; beneath, the throat white in the middle, gradually widening, and forming a large triangular patch surrounded by a narrow dark border; breast and flanks fulvescent-olivaceous, whitish on the middle of the belly and vent.

Bill black; legs and claws pale fleshy; irides dark brown. Length 5 inches; extent 8; wing $2\frac{5}{8}$; tail 2; bill at front 9 mill.; tarsus $\frac{3}{4}$.

This remarkable bird is found in the Eastern Himalayas, extending into the hilly regions of Arakan and Tenasserim, and therefore probably occurring in the intermediate hilly regions of Assam. It is not uncommon about Darjeeling, frequenting open forests, and may often be seen seated on a low branch on the stump of a tree, sometimes catching insects in the air, or descending to the ground to pick one up, and even hopping on the ground. It is found from about 3,000 to 7,000 feet or so.

This last genus, and the succeeding ones, show more distinctly

than any of the previous groups a tendency to the *Saxicolinæ*, in their more slender bills and slightly lengthened tarsi and feet; but still the preponderance of characters is with the Flycatcher series; the tarsus is always shorter and more slender, the bill slightly wider, and they are more given to capture insects on the wing than any of the Chats.

Gen. SIPHIA, Hodgson.

Syn. *Dimorpha*, Hodgs. *Digenea*, Hodgson, partly.

Char.—Bill depressed, a little wide at base, gradually narrowing; nareal bristles lengthened; rictal bristles moderate, weak; wings moderate, first three quills graduate, 4th and 5th equal and longest, or 4th slightly exceeding 5th; tail nearly even; tarsus moderate, smooth; feet moderate; toes slightly lengthened; lateral toes very unequal; claws rather long, slightly curved.

The birds composing this genus were formerly classed separately, the one as *Siphia*, and the other as *Digenea*; but they are now all merged in *Siphia* by Mr. Blyth, whom I shall here follow. They are birds of small size, varying somewhat in their mode of coloration. They are all natives of the Himalayas.

The first species is allied in coloring to the last, or to female *Niltava*, as well as to *Cyornis ruficauda*.

318. **Siphia tricolor,** HODGSON.

Digenea apud HODGSON, P. Z. S., 1845-26—HORSF., Cat. 454—BLYTH, Cat. 1010.

THE BROWN-WINGED FLYCATCHER.

Descr.—Above olive-brown, fulvescent on the rump; quills rufous-brown; tail dull ferruginous; under parts light earthy-brown, albescent on the throat and belly.

Bill dusky; legs brown. Length $4\frac{3}{4}$ inches; wing $2\frac{1}{4}$; tail 2; bill at front not quite 9 mill.; tarsus $\frac{5}{8}$.

I did not myself procure this Flycatcher, which appears to extend throughout the Himalayas, having been obtained at Mussooree and in Nepal.

It is the type of Hodgson's *Digenea*, differing in its more slender bill, weak but longer rictal bristles, in the fourth quill being the longest, and the lateral toes less unequal.

319. **Siphia strophiata**, Hodgson.

Ind. Rev. 1, 651—Blyth, Cat. 1008—Horsf., Cat. 452—*Siphya* in Nepal—*Phatt-tagrak-pho*, Lepch.

The Orange-gorgeted Flycatcher.

Descr.—Above, dusky-olive, tinged with cinereous, all the feathers being ashy at the base; stripe from the forehead to the eye white; lores and cheeks black; quills dusky, edged with olive-brown; tail with the two central feathers black; the rest white at the base for more than half their length (increasing in extent to the outermost feather), black at the terminal end; beneath, chin and throat black, passing to dusky-ashy on the breast and abdomen, with a bright ferruginous breast-spot or gorget; lower abdomen and under tail-coverts white; flanks olive-brown.

Bill black; legs brown; irides dark brown. Length $5\frac{1}{2}$ inches; extent 9; wing 3; tail $2\frac{1}{4}$; bill at front 9 mill.; tarsus $\frac{11}{16}$.

The Orange-throated Flycatcher is found throughout the Eastern Himalayas at an elevation of from 6,000 to 8,000 feet and upwards It is very common about Darjeeling, and may often be seen on the roadside, seated on a fallen tree or stone, frequently alighting on the ground to pick up an insect, occasionally making a dart at one in the air, and returning to its perch. The white at the base of the tail shews very conspicuously when the bird is on the wing.

This bird is the type of *Siphia*, as restricted by Hodgson; and by the white on the tail, and the red on the breast, evinces an affinity for *Erythrosterna*.

320. **Siphia leucomelanura**, Hodgson.

Digenea apud Hodgson, P. Z. S., 1845—Blyth, Cat. 1011—Horsf. Cat. 455.

The Slaty Flycatcher.

Descr.—Above, dark slaty blue, or dull cyaneous; forehead and eye-streak vivid greyish-blue; lores, ear-coverts, and sides of the neck, black; tail black, its basal half white, except the two central feathers which are pure black; beneath, the chin, middle of the throat and fore-neck white; the rest of the under parts light purplish-grey; vent and under tail-coverts white.

Bill dusky; feet brown; irides dark brown. Length 5 inches; wing $2\frac{3}{8}$; tail $2\frac{1}{8}$; bill at front 8 mill.; tarsus $\frac{11}{16}$.

The Slaty Flycatcher is known throughout the Himalayas, but is rare; and I procured one specimen only whilst at Darjeeling. I shot it in open forest.

This species, by its coloring, recalls some of the *Muscicapulæ*.

321. **Siphia superciliaris**, Blyth.

Dimorpha apud Blyth, J. A. S., XI., 190—Blyth, Cat. 1009—Horsf, Cat. 453—Musc. hyperythra, Blyth, J. A. S., XI., 885, and, by oversight, M. rubecula, Blyth—Dimorpha rubro-cyanea, Hodgs—D. leucocyanea, Hodgs.

The rufous-breasted Flycatcher.

Descr.—Above, with the lores, cheeks, and sides of the neck, uniform dusky-cyaneous; the lateral feathers of the forehead white-tipped, forming a white supercilium; the bases of the primaries and secondaries rufous-brown, contrasting with the cyaneous hue of their coverts; beneath, the throat and breast are light ferruginous, paling on the belly, and passing into white on the vent and lower tail-coverts.

Bill black; legs plumbeous; irides brown. Length $4\frac{1}{2}$ inches; wing $2\frac{1}{2}$; tail $1\frac{3}{4}$; bill at front 7 mill.; tarsus $\frac{11}{16}$.

This species, as far as known, is peculiar to the S. E. Himalayas. It has only been procured in Nepal and Sikhim. Its colors approximate it to some of the *Cyornis* group, as well as to *Nemura* among the Redstart series.

322. **Siphia erythaca**, Blyth and Jerdon.

P. Z. S., 1861, p. 201.

The Rusty-breasted Flycatcher.

Descr.—Above dusky slate colour, sides of the throat and neck the same; wings and tail dusky, the quills edged with brown, and the base of all but the middle pair of tail-feathers white; middle of the throat, breast, and flanks, bright ferruginous; vent and lower tail-coverts white.

Bill blackish; legs fleshy brown; irides brown. Length 5 inches; wing $2\frac{3}{4}$; tail 2; bill at front 7 mill; tarsus $\frac{11}{16}$.

I procured a single specimen of this bird at Darjeeling.

Gen. ERYTHROSTERNA, Bonap.

Syn. *Synornis*, Hodgson.

Char.—Bill moderately wide at the base, depressed, slightly hooked and notched at the tip; rictal and nareal bristles moderate; wings moderate, or rather long, 3rd quill nearly as long as the 4th; tail moderate, even or emarginate; tarsus slightly lengthened; feet moderate.

This genus, the type of which is *E. parva* of Europe, comprises a group of small Flycatchers, whose colours recal those of *Alseonax;* but it is most closely related to *Siphia*, differing in having the first primary less developed, and the second more so. The males of three of the species, at least, assume, in the summer season, a bright ferruginous throat or breast, like the well-known Robin Redbreast of Europe. One species is colored anomalously, black and white.

323. **Erythrosterna leucura**, GMEL.

Muscicapa apud GMELIN.—BLYTH, Cat. 1005—HORSF., Cat. 462—Saxicola rubeculoides, SYKES, Cat. 91—and JERDON, Cat. 106—Synornis joulaimus, HODGS.—Musc. parva apud SUNDEVALL—Rubecula Tytleri, JAMESON?—Musc. albicilla, PALL.—*Turra*, H.—*Chut-ki*, Beng.

THE WHITE-TAILED ROBIN FLYCATCHER.

Descr.—Above greyish olive-brown, wings brown; tail blackish-brown, the four outer tail-feathers, on each side, white for the greater part of their length, broadly tipped with brown; beneath, white, tinged with ashy brown on the breast and flanks.

Bill dusky brown, legs pale brown; irides dark brown. Length 5 inches; wing $2\frac{6}{10}$; tail 2; tarsus $\frac{7}{10}$; bill at front 9 mill.

In spring, by the end of March or the beginning of April, the male, by a partial moult, assumes a bright orange-rufous chin and throat, and the lores, cheek, and the sides of the neck, become tolerably pure ashy. This livery is again cast at the autumnal moult.

"This species appears," says Mr. Blyth, "only to differ from *E.*

parva in having the ferruginous coloring confined to the chin and throat, instead of spreading down the breast."

This interesting little bird is found throughout the whole of India, from the base of the Himalayas to the extreme south, and Ceylon; also in Burmah, and from China to Afghanistan. It was sent by Mr. Swinhoe as *Musc. mugimaki* of Tem. and Schl., but whether identical or not with the Japanese bird, appears doubtful, for that bird is described as being black above. Perhaps, however, Mr. Swinhoe, by a lapsus pennæ, wrote *mugimaki*, instead of *akahige*; for I see a *Sylvia akahige* figured, with quite the plumage of an *Erythrosterna*.

It is more common towards Central and Northern India than in the South, and may be seen in every grove. Often a party of five or six may be seen sporting about the trunk of some mango or tamarind tree, now clinging to the trunk, then darting after an insect in the air, or alighting on the ground to pick one up. It is, however, frequently seen singly, and its manner much reminds one of those of the British Robin.

The next two species approximate the last closely in general structure and colour, but want the white at the base of the tail.

324. **Erythrosterna pusilla**, Blyth.

Musc. acornaus of Central India, Blyth, J. A. S., XVI., 127.

The Rufous-backed Flycatcher.

Descr.—Above greyish-olive, fulvescent on the rump and upper tail-coverts, and the tail-feathers with rufous-brown margins; front and lores tinged rufescent; beneath white, pure on the throat, belly, and under tail-coverts, tinged with grey on the breast and flanks; axillaries pure white; greater wing-coverts tipped whitish, forming a slender cross band.

Bill blackish; legs dusky brown; irides dark brown. Length $4\frac{3}{8}$; extent $6\frac{3}{4}$; wing $2\frac{3}{10}$; tail $1\frac{3}{4}$; bill at front 8 mill.; tarsus $\frac{10}{16}$.

In summer, the male assumes a bright ferruginous color on the chin and throat.

This little Flycatcher occurs in the plains of Central India during the cold weather, and retires to the Himalayas during the summer

to breed. I obtained it near Darjeeling in summer dress; and Mr. Blyth observed it common on trees near villages in the Midnapore district, and says that it resembles the last in its habits. It is not found in Lower Bengal, and I cannot say that I have seen it on the plains.

325. **Erythrosterna acornaus,** HODGS.

J. A. S., XVI., 127.

THE BROWN FLYCATCHER.

Descr.—Above greenish-olive, with the upper tail-coverts ashy; primaries dusky; secondaries externally margined with olive, and the tertiaries with whitish-grey; the greater coverts whitish, forming a slight wing-band; beneath albescent-greyish, slightly tinged with fulvous in some; the throat, middle of belly, and lower tail-coverts dull white.

Bill blackish; legs brown. Length $4\frac{1}{4}$ inches; wing $2\frac{1}{4}$; tail $1\frac{3}{4}$.

This plain-colored Flycatcher has only been found in the Eastern Himalayas, in Nepal; and it is not known whether it assumes the rufous throat or not.

326. **Erythrosterna maculata,** TICKELL.

Muscicapa apud TICKELL, J. A. S., II., 574—Muscicapula, BLYTH, Cat. 1013—HORSF., Cat. 457—M. leucoschista, HODGS.—M. melanoleuca, BLYTH, and GRAY, Cat. Nep. Birds. *Tuni-ti-ti*, Lepch.

THE LITTLE PIED FLYCATCHER.

Descr.—Above, with the lores, cheeks, and sides of the neck, black; a broad white eyebrow extending to the nape; large spot on the wings, formed by the greater coverts, and the edges of the secondaries, white; and all the tail-feathers, except the central ones, white for two-thirds of their length; beneath pure white.

Bill black; legs red-brown; irides dark brown. Length $4\frac{1}{2}$ inches; extent $7\frac{1}{2}$; wing $2\frac{3}{8}$; tail $1\frac{7}{8}$; bill at front 8 mill.; tarsus $\frac{9}{16}$.

This Little Pied Flycatcher assimilates *E. leucura* in its white tail, though otherwise so different. It is also allied, though more distantly, to *Hemipus* of the *Maluconotinæ*. It is found in the

S. E. Himalayas, extending through Arakan and Tenasserim into Western Malasia; and also in Central India, perhaps only during the cold weather. Tickell obtained it in the forests of Central India, stating that it is rare; and Blyth procured it in the Midnapore district, where not rare; but I have only myself observed it in the Sikhim Himalayas. It is tolerably abundant near Darjeeling, at from 3,000 to 7,000 feet, most common perhaps at from 4,000 to 5,000 feet. I saw it in pairs, but generally in small parties, active and restless, capturing insects entirely on the wing, and wandering about a good deal. It has a pleasing little song or chirp, which the Lepchas imitate by the name they give it.

Bonaparte, in his Conspectus, gives two additional species of *Erythrosterna*, *E. solitaria*, Mull., from Sumatra, and *E. rufigula*, Kuhl, from Java, one of which is possibly Blyth's *E. erythaca*, from Penang.

The only other forms placed by the Prince of Canino in this division of the Flycatchers are *Choredhyla*, founded on a Japanese bird, *Musc. hylocharis* of Temminck; and *Micræca* of Australia. This last genus, both in appearance and habits, appears quite to represent our plain-colored Flycatchers, *Alseonax* or *Hemichelidon*. *Muscitrea cinerea* of Blyth, from Arrakan, belongs to this group.

The next division of the Flycatchers, *Melanornitheæ* or *Monarchinæ* comprises a few African birds, but the majority are from Malayana and the Oceanic province.

The sub-fam. *Tyranninæ* of America comprise a large number of birds, many with green and yellow plumage, whose habits are more or less like those of the Flycatchers. Some of the larger-sized ones, as already remarked, possibly belonging to the Shrikes. Their bill is straight, depressed, short, or of moderate length, and the tip abruptly hooked; the nostrils and gape are both defended by bristles; and their feet are short and slender. They live on insects, which they capture in the air, or pick off the ground or trees.

The sub-fam *Alectrurinæ*, Gray, or the Water-chats of S. America, pass, it is stated, into the lesser Tyrants by imperceptible degrees. They have lengthened tarsi and feet, and are the most aberrant and ground-frequenting birds of the family; many of them have black and white plumage.

The *Setophaginæ* are a group of small Flycatchers peculiar to America; some are coloured like the Tyrant Flycatchers, others are red and black, like our *Pericrocoti*.

Fam. MERULIDÆ, Thrushes.

Bill typically moderate, compressed, nearly straight, with the culmen gently curved, and slightly notched or entire; in a few larger and curved; in some thick and deep; tarsus moderate or long; feet strong, fit for progression on the ground.

The Thrushes are mostly birds of moderate size, a few very small, others nearly as large as a Jay. Their food is mixed, consisting both of insects (especially of the softer kinds), grubs and snails, and also of fruit, rarely of hard seeds. Their wings are long and somewhat pointed in some, short and rounded in others. The tail varies in each sub-family. They nestle generally in low trees or shrubs, and the eggs of many are more or less blue, and spotted.

I divide the Thrushes as here characterized into three sub-families, *Myiotherinæ*, or Ground Thrushes; *Merulinæ*, or True Thrushes; and *Timalinæ*, or Babbling Thrushes.*

At one time I was inclined to consider the Bulbuls and Orioles as part of this great family group; but have thought it more adviseable to separate them.

Sub-fam. MYIOTHERINÆ, Swains, Ground-Thrushes.

Formicarinæ, Gray; *Pittidæ* and *Cinclidæ*, Bonap.—*Brachyuridæ*, Blyth.

Bill slender, straight, or slightly curved; stout in a few; wings typically short; feet and legs long and strong; tail short in most.

According to the views adopted in this work, I include in this family, of Indian forms, the Wrens, and some allied birds; the *Brachypteryx* series; the group of *Pittæ*, or Ant-Thrushes, and their allies, *Myiophonus*; and the water Dippers. Although there is apparently considerable diversity between some of the groups arranged here, yet they form a series in which, though not unbroken, a general similarity is apparent, and certain affinities may be traced throughout. Horsfield's arrangement is nearly the same, but he removes *Myiophonus* to the true Thrushes, and Gray puts the Wrens and their allie[illegible] his *Menurinæ*, a sub-family of the Cree-

pers. Blyth, in his late classification, brings the series together very much as I have done, adding to it *Enicurus*, which I place among the Wagtails. Gray includes in his family several Malayan forms, usually classed among the *Timalinæ*.

Bonaparte's sub-families of *Cinclinæ*, *Pittinæ* and *Myiophoninæ*, following one another in the order here given, nearly coincide with our group; but he removes *Troglodytes* to his *Malurinæ*, in which he includes many of the smaller *Timaline* forms. It will thus be seen that, with few exceptions, most modern ornithologists are nearly agreed as to the propriety of placing the birds of the present series together, in spite of their apparent differences.

Of birds foreign to India, the present sub-family includes the whole of the American Ant-Thrushes and Wrens.

In general, the Ground Thrushes may be said to be birds of small or moderate size, with short wings and tails, feeding chiefly on the ground and on insects. They nidificate, some in bushes, others on the ground, or on rocks near water. Most of them are of plain and sombre plumage; but one group is remarkable for the rich and gay colours with which its members are adorned.

I shall divide them for convenience into the following groups—Wrens, Short-wings, Ground-Thrushes, Whistling Thrushes, and Wren Thrushes.

1st.—WRENS.

These birds, by their small size and slender bills, would appear at first sight better placed among the *Sylviadæ;* but they differ from any of that family by their long, strong legs, and short tails, and, through the group of American Wrens, *Thryothorinæ*, are clearly connected with the Ant-Thrushes of the same continent.

Gen. TESIA, Hodgson.

Syn. *Oligura*, Hodgson.

Char.—Bill of moderate length, barely depressed, straight, slightly bent at the tip; nares cincline, membranous; rictus with a few feeble bristles; wings feeble, round; tail short, nearly obsolete; tarsus high, slender, almost smooth; toes slender, compressed; nails acute; lateral toes unequal; hind toe large; claws long, slightly curved. The only two species at present known of this genus are confined to the mountain forests of the Himalayas, and

of Assam. "They live," says Hodgson, "in moist woods where there is plenty of under-wood; they are solitary, silent, feed on the ground on insects, and also on seeds; their stomach is muscular and thick, and they are said to breed on the ground. They have rather gay plumage, but one of the two species shows, in the colors of its lower parts, an approximation to the sober tints of the next group.

327. **Tesia castaneo-coronata,** Burton.

Sylvia apud Burton—P. Z. S., 1835—T. flaviventer, Hodgson, J. A. S., VI.,—Blyth, Cat. 1059—Horsf., Cat. 239—Gray, Genera of Birds, pl. 47 f.—*Tisi* of Nepal—*Samtit-pho*, Lepch.

The Chestnut-headed Wren.

Descr.—Above bright olive-green, below pure yellow, the head and ear-coverts lively chestnut; bill dusky, yellowish beneath; legs pale brownish-yellow; irides dark brown.

Length about 3¾ inches; extent nearly 6; wing not quite 2; tail not 1; tarsus about 1 inch; bill at front nearly

The Chestnut-headed Wren is found chiefly in the Eastern part of the Himalayas, Nepal and Sikim, at about from 3,000 to 6,000 feet of elevation. I saw it on the banks of the Rungnoo, solitary, flying near the ground among some low brush-wood: I found remains of insects alone in its stomach. It does not appear to be very rare. A nest made chiefly of moss, with four small white eggs, was brought me as the nest of this bird. It was of the ordinary shape, rather loosely put together, and the walls of great thickness. It was taken from the ground, on a steep bank near the stump of a tree.

328. **Tesia cyaniventer,** Hodgson.

J. A. S., VI., 101—T. auriceps, Hodgson—Saxicola olivea, McLelland—Blyth, Cat. 1058—Horsf., Cat. 238—*Ti-si*, in Nepal—*Samtit-tammong*, Lepch.

The Slaty-bellied Wren.

Descr.—Dull olive-green above, the head of the male golden-green, contrasting with the dull green of the back; slaty beneath; bill dusky above, reddish beneath; legs pale reddish-brown; irides brown.

Length $3\frac{1}{2}$ inches; wing 2; tail $\frac{9}{10}$: tarsus 1; bill at front $\frac{3}{8}$; extent $5\frac{3}{4}$.

This Wren is found in the S. E. Himalayas. It is rarer than the last at Darjeeling, and is usually found at a lower elevation. It is also found in Assam.

Gen. PNÖEPYGA, Hodgson.

Syn. *Microura*, Gould; *Anura*, Hodgson.

Char.—Bill short, straight, compressed, somewhat depressed at the base; rictus smooth; wings very short, broad, rounded; tail (typically) rudimentary, of 6 plumes; tarsus long, stout, almost entire; feet long, middle toe much lengthened; lateral toes nearly equal.

These Hill-Wrens are remarkable little birds, the most typical being altogether without a tail, of sober, but full and silky plumage; and living in damp, thick forests, among fallen trees and low brushwood. They differ from the last in the Wren-like character of their plumage, in their smooth gape, still more deficient tail, and longer middle toe.

They feed chiefly on insects, but, like the last, have a strong muscular stomach, and sometimes eat seeds; they are said to have their nests on the ground, or in banks. I observe that Gray, in his list of the Genera of Birds, makes this species the type of *Tesia*; but Hodgson never intended this, though he at first classed the present bird under that genus.

Prince Bonaparte states that the type of Gould's *Microura* is a Javanese bird, and that therefore the present species should retain Hodgson's name, *albiventer*; but this appears very doubtful, and Horsfield has not adopted that nomenclature.

329. **Pnoepyga squamata,** GOULD.

Microura apud GOULD, Ic. Av., pl. 5—Tesia albiventer, and rufiventer, HODGS, J. A. S., VI.; and P. unicolor, HODGS., P. Z. S., 1845—BLYTH, Cat. 1060—HORSF., Cat. 240. *Marchok-bong*, Lepch.

THE SCALY-BREASTED HILL-WREN.

Descr.—Above olive-brown, more or less dotted with buff; beneath white, the feathers broadly scaled with brown; sometimes

the breast alone is white, more or less spotted, and the abdomen fulvous or brown; at other times the breast is fulvous, with a few dusky markings, and the abdomen brown; and at other times, again, the whole plumage is uniform brown without spots.

Legs fleshy-brown; bill dusky brown above, fleshy at the base beneath; irides brown. Length 4½ inches; wing 2¼; extent 7½; tail quite rudimentary; bill at front ⅜.

The changes of coloration in this species do not appear to be satisfactorily determined; but they probably depend on age rather than sex: they appear to lose the spots by age. As those birds with white under plumage have the upper feathers more spotted, I consider them to be the young birds; that those, with buff-scaled under parts, are older; and that the uniform brown are the fully adult, or very aged; the white and fulvous-breasted birds may perhaps respectively represent young male and female; birds in the uniform brown plumage appear to be rarely met with.

This, the largest species of Hill Wren, has only been found in the Himalayas. It is not uncommon about Darjeeling, and is found up to at least 8,000 feet of elevation. From its habits it is not easily observed. I have seen it hunting under and on a fallen moss-clad tree, and now and then on a forest path, by the trunk of some large tree, to which it would cling for a few moments.

330. **Pnoepyga pusilla**, Hodgson.

J. A. S., XIV., 588—Blyth, Cat. 1061—Horsf., Cat. 241.

The Brown Hill Wren.

Descr.—Above dark brown; the wing-coverts with some terminal pale dots; lores and beneath light brown, the feathers slightly margined with black; and those of the flanks dark, with brown margin and black tip. Bill dusky; legs horny brown.

Length about 4 inches, wing 1¾; bill at front. $\frac{5}{10}$

This appears a rare bird; but one specimen being in the Asiatic Soc. Museum, and one in the E. I. C. Museum in London. It is very similar in its markings to some of the states of the last

species; and Horsfield indeed puts, as a query, whether it be not a small variety of that, to answer which further specimens are desirable. I did not myself procure it at Darjeeling.

331. **Pnoepyga caudata**, Blyth.

J. A. S., XIV., 588—Blyth, Cat. 1062—Horsf., Cat. 242.

The Tailed Hill Wren.

Descr.—Above, dark rich olive-brown, the feathers faintly edged and shafted black; lores and orbitar region dusky gray; the throat bright ferruginous, paling on the breast, the feathers of which have black centres and tips; belly similarly marked with dusky and white; wings uniform dark reddish-brown; tail inclining to the same, soft and flexible.

Bill blackish; legs brown; irides brown. Length $3\frac{6}{8}$ inches; wing $1\frac{3}{4}$; extent 6; tail 1; bill at front $\frac{7}{16}$.

This species inhabits Nepal and Sikim. I procured it at Darjeeling, where it bore the same name as the first species, and was indeed not distinguished from it by the natives.

332. **Pnoepyga longicaudata**, Moore.

P. Z. S., 1854.

The Long-tailed Hill Wren.

Descr.—Above deep olive-brown, the feathers slightly margined with black, and with black shafts; throat whitish; breast and sides of abdomen pale dusky ferruginous, the feathers with pale centres and dark margins; lower breast and abdomen white in the middle; flanks brown; vent and under tail-coverts dark ferruginous; wings and tail inclining to ferruginous-brown.

Bill dark horny; legs paler. Length $4\frac{1}{2}$ inches; wing 2; tail $2\frac{1}{4}$, rounded; upper tail-coverts long.

This is very closely allied to the last in coloration, the chief difference being the white on the throat and middle of the abdomen of this species; and were it not for the long tail of this, one would be inclined to join them. Moore gives Northern India as the habitation of this species, it may be the N. W. Himalayas;

perhaps the Khasia hills. Bonaparte, in his Conspectus, gives two species of *Micrura* from Java.

Gen. Troglodytes, Vieillot.

Char.—Bill rather long, slender, compressed, entire; wings short, rounded; tail short, narrow, and rounded; tarsus moderate or rather short; toes long; lateral toes nearly equal; middle toe lengthened; claws moderately curved; hind claw large.

The true Wrens of Europe, N. America, and India, are plain-colored small birds, whose place in the natural system is not universally agreed on by naturalists. Some place them as a separate family of the *Certhiadæ*, among the Tenuirostral tribe; others place them with the lesser warblers; Horsfield and Blyth place them in our present sub-family, and I quite agree with them. As previously stated, by means of the American Wrens, *Thryothorus*, and their affines, they quite grade into the Ant-Thrushes. The European and N. American Wrens are familiar birds, living in hedge-rows and bushy ground, on insects, and occasionally seeds, and having a pleasant little song. They form a dome-shaped nest, with a hole at one side, and lay numerous eggs. The Indian Wrens are rare, and their habits being most retired, have been but little noticed.

333. **Troglodytes nipalensis,** Hodgson.

Blyth, J. A. S., XIV., 589—T. subhemalayanus, Hodgs., apud Gray, Cat. Birds of Nepal—Blyth, Cat. 917—Horsf., Cat. 243—*Marchok-pho,* Lepch.

The Nepal Wren.

Descr.—Above, including wings and tail, umber-brown with dark bars; beneath pale brown, with numerous very narrow brown cross-bars. Bill brown; legs horny-brown; irides hazel-brown: about the size of the English Wren.

It differs slightly from the European Wren in its darker color, and having the back more barred, and the under parts throughout distinctly barred, and more closely so than the upper parts; bill, too, shorter and wider at the base. It has been found in Nepal and Sikhim, and the N. W. Himalayas. I saw it on one or two occasions only, in some thick brush-wood by the side of a mountain-

stream about 4,500 feet high. Adams observed it among stony places in glens, and around the margins of the avalanches on the Cashmere ranges, common.

The next species has been separated by Mr. Blyth as a distinct form or sub-genus under the name of *Spiloptera*. It differs from true *Troglodytes* by its shorter and deeper bill, and by the spotted, in place of barred, character of its plumage.

334. **Troglodytes punctatus**, Blyth.

J. A. S., XIV., 589—Blyth, Cat. 918—*Marchok-pho*, Lepch.

The Spotted Wren.

Descr.—Upper parts fuscous-brown, with a pale or white speck on the tip of each feather; tail barred, as in the European Wren; the feathers softer and more graduated; tertiaries comparatively broad, of a dark mahogany color; bars on the outer webs of primaries the same color; under parts delicately mottled with pale spots, thickest on the breast, fewest on the belly, which has a fulvous tinge; bill horny-brown; legs pale brown; irides brown.

Size of the European Wren: wing $1\frac{3}{4}$; tail $1\frac{1}{4}$.

This Wren is very rare at Darjeeling. I procured a single specimen, and Mr. Blyth has obtained only one.

Gen. Rimator, Blyth.

Syn. *Caulodromus*, Gray; *Merva*, Hodgs.

Char.—Bill longer than the head, slightly compressed, curved, not notched; nostrils basal, ovate; gape extending to the eye, with only a few inconspicuous hairs; legs moderately strong; tarsus scutellate; toes long, the outer longer than the inner; claws not much curved, hind claw large; wings bowed and rounded, 5th, 6th and 7th quills equal and longest; tail short and weak, the feathers slender with soft slightly-pointed tips; plumage lax, very much so over the rump.

This remarkable genus was described in the same year by three naturalists; but Mr. Blyth's name has the priority, and was moreover founded on the identical specimen belonging to Mr. Grace, that afterwards, on the arrival of that gentleman in London,

formed the type specimen of Mr. Gray's genus; and, as Mr. Blyth informs us, had his M. S. name attached to the label.

335. **Rimator malacoptilus**, Blyth

J. A. S., XVI., 154 and 878—Caulodromus Gracei, Gray, Ann. Mag N. H., 1847—Merva Jerdonii, Hodgson, Calc. J. N. H., 1847, p. 96, with a figure—Gray, Ill. Gen Birds, pl.—Blyth, Cat. App. No. 6, p. 338.—*Karriak tungbrek-pho*, Lepch.

The Long-billed Wren.

Descr.—Above, deep brown, with pale fulvous shafts; scapulars and interscapulars mixed black and brown; quills and tail deep brown, with a slightly ruddy tinge; under parts pale brown; chin whitish, a black streak on each side of the throat, with a few dusky spots; feathers of the breast margined with olive; flanks olive, tinged ferruginous; lower tail-coverts dark rusty. Bill dark horny, fleshy at the base; legs brownish red; irides light brown.

Length 5 inches; extent 7; wing $2\frac{1}{4}$; tail $1\frac{1}{4}$; bill at front 1 inch; tarsus $\frac{1}{8}$; hind claw $\frac{3}{8}$.

I procured two or three specimens of this remarkable bird at Darjeeling, but regret that I did not observe it myself. It was said to be chiefly a feeder on the ground, among brushwood and fallen trees, and I found the remains of insects in its stomach. I have little doubt of the propriety of placing it here. Mr. Blyth calls it a *Myiotherine* bird, approaching the Wrens. Gray puts it in his sub-family *Certhinæ*, as does Pr. Bonaparte, but quite erroneously, I think. Other Wrens are found in Africa, *Oligura*, Rüppell, and *Comaroptera*, Sundeval.

The next group of birds comprises several genera peculiar to the Indian region, whose place in the natural system has been subject of some doubt, though most systematists are nearly agreed. Gray places it in his *Formicarinæ*, as does Horsfield; and Blyth classes it next to the Wrens. Bonaparte also places it in his *Pittinæ*, near *Tesia* and *Pnöepyga*. They are mostly birds of dull slaty plumage, the females in some brown, and their plumage is soft and flimsy. They appear to have relations on one side with some of the *Saxicolinæ* through *Hodgsonius*, and, on the other side, with some Malayan birds usually classed with the *Timalinæ*.

Gen. BRACHYPTERYX, Horsf.

Syn. *Goldana*, Gray.

Char.—Bill of moderate length, straight, curving gently at the tip, and slightly notched; nostrils with a tuft of nareal bristles at the base; gape smooth; wings short, rounded; 4th, 5th, and 6th quills longest, 5th slightly the longest; tail short, soft and flexible; tarsus very long and strong; feet large; middle toe lengthened; laterals nearly equal; hind toe large; claws long, not much curved. Sexes differ in colour.

The birds of this genus are mostly of a dull bluish color, with long legs and short tail. They are closely allied, I conceive, to *Pnöepyga*; and I see that a bird from some of the isles has been classed by some as a *Brachypteryx*, and by others as a *Microura*.

336. **Brachypteryx nipalensis,** HODGSON.

MOORE, P. Z. S., 1854—HORSF., Cat., App. 647.

THE WHITE-BELLIED SHORT-WING.

Descr.—Male, color, above a greyish-cyaneous, or dusky blue, as are the cheeks, sides of breast, and flanks, paling to greyish-white on the middle of the breast; throat, middle of belly, vent and under tail-coverts, and a streak over the eye, white.

Female, ferruginous-brown above, paler on the sides, throat, breast, and belly; under tail-coverts, and superciliary streak, whitish; the feathers on the breast and sides, tinged with brown. Bill dark horny; legs pale brown; irides light brown.

Length $4\frac{1}{2}$ inches; extent $7\frac{1}{2}$; wing $2\frac{1}{2}$; tail $1\frac{3}{8}$; tarsus 1; bill at front $\frac{1}{2}$. Another was 5 inches long and the tail $1\frac{1}{2}$.

This species closely resembles the *Pnœpygæ* in size and general structure; as also in the colouring of the female. I procured several specimens at Darjeeling at various elevations, from 4,000 to 8,000 feet. It feeds chiefly on insects. Mr. Hodgson also sent it latterly, either from Nepal or Sikhim.*

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* All of Mr. Hodgson's specimens are stated in Horsfield's Catalogue to be from Nepal; but Mr. Hodgson, as is well known, resided in Sikhim, at Darjeeling, for the last years of his residence in India, and collected there largely. I suspect, therefore, that most of his latter contributions to the Museums at home were from Sikhim and not from Nepal.

337. **Brachypteryx hyperythra**, Jerdon and Blyth.

P. Z. S., 1861, p. 201.

THE RUSTY-BELLIED SHORT-WING.

Descr.—Above, dusky olive-brown; lores tinged with ferruginous; beneath ferruginous; middle of the belly white.

Bill corneous; legs fleshy; irides brown. Length nearly 5 inches; wing $2\frac{1}{2}$; tail $1\frac{3}{4}$; bill at front $\frac{7}{16}$; tarsus $1\frac{1}{16}$.

This bird, of which I obtained a single specimen at Darjeeling, nearly corresponds in size with the last, but is a decidedly larger bird, and otherwise differs. It is probably a female.

338. **Brachypteryx cruralis**, Blyth.

J. A. S., XII., 933—Larvivora homochroa, Hodgs., Gray's Zool. Misc., 1844—Blyth, Cat. 1056—Horsf., Cat. App. 646. B. aurifrons, Jerdon and Blyth, the female.

THE WHITE-BROWED SHORT-WING.

Descr.—Male, color above a deep cyaneous, or dusky greyish-blue, paler and more dingy on the belly, and with a conspicuous white superciliary streak.

The female is olivaceous-brown above; the forehead, lores and throat, ferruginous, or ferruginous-white; wings and tail rusty-brown; beneath, paler or more dusky ferruginous, passing to sullied white.

Bill black; legs pale brownish. Length $5\frac{1}{4}$ inches; wing $2\frac{5}{8}$; tail $1\frac{3}{4}$; bill at front $\frac{5}{8}$; tarsus $1\frac{1}{4}$.

This Short-wing very nearly approaches *B. montana* of Java, but differs by its slightly smaller size, shorter tail, and much feebler feet. It is found in Nepal and Sikhim, but appears to be rare. I did not myself procure it at Darjeeling. Horsfield states, of its near congener of Java, that it is chiefly found in the mountainous districts, on low branches, or on the ground, on which it makes its nest, feeding on larvæ of insects, worms, &c. Its common note is a quiet reiterated babbling, but it has also a protracted plaintive note.

Other recorded species of Brachypteryx are *B. Palisseri*, Kelaart, from Ceylon; *B. montana*, of Java, already alluded to; and *B. albifrons*, Boie, apud Bon., also from Java. *B. leucophrys*, T., *B. leptura*, Kuhl, *B. superciliaris*, Verreaux, apud Bonaparte, and perhaps several of the *Myiotheræ* of Temminck, may perhaps belong to this group, rather than to the Timaline series. *Muscicapa longipes* of Lesson, Voyage de Coquille, pl. 19, appears, both from form and coloration, to be a *Brachypteryx*.

Gen. CALLENE, Blyth.

Syn. *Cinclidium*, olim, Blyth.

Char.—Bill shorter than the head, straight, slender, higher than broad, with the ridge acute; lower gonys ascending; nares partially impended by some short half-reflected feathers; gape with a few small setæ; wings and tail rounded; the 4th, 5th, and 6th quills equal and longest; legs and feet slender; tarsus long; middle toe long; claws not much curved.

This genus differs from *Brachypteryx*, to which it is nearly allied, in its larger and stronger bill, more developed tail, and the somewhat scale-like character of the plumage.

339. **Callene rufiventris**, BLYTH.

Phænicura major, JERDON, Suppl. Cat. 109 bis.—BLYTH, Cat. 1054.

THE RUFOUS-BELLIED SHORT-WING.

Descr.—Plumage generally dark slaty-cinereous; belly, vent, and under tail-coverts ochrey-yellow, passing into white.

Bill black; legs dirty reddish; irides brown. Length 7 inches; wing $3\frac{4}{10}$; tail $2\frac{7}{10}$; bill at front $\frac{11}{20}$; tarsus $1\frac{3}{10}$.

I first described this bird as a *Phænicura*, and Blyth afterwards transferred it to *Brachypteryx*; but it certainly belongs to the same genus as the next bird, as since placed by Mr. Blyth, who found it necessary to change the specific name given by myself, as it is not so large as the next species. Inhabits the Neilgherries.

340. **Callene frontalis**, BLYTH.

Cinclidium apud BLYTH, J. A. S., XI., 181 and XII., 954, with figure—BLYTH, Cat. 1053—HORSF., Cat. App. 644.

THE BLUE-FRONTED SHORT-WING.

Descr.—Plumage dark fusco-cyaneous, with the rump dusky; lores and above the beak blackish, contrasting with the bright cærulean forehead; the bend of the wing also pale-blue, but less bright than the forehead; wings dark olive-brown, with a white spot on the under surface, beneath the winglet; beneath, dull cyaneous, ashy on the flanks, and the middle of the belly slightly edged with grey.

Bill black; legs brown. Length $7\frac{5}{8}$ inches; wing $3\frac{3}{8}$; tail $3\frac{1}{2}$; bill at front $\frac{5}{8}$; tarsus $1\frac{3}{8}$.

This species has only been obtained from Nepal and Sikhim. I did not myself procure it whilst at Darjeeling, and nothing is recorded of its habits, except that Mr. Blyth was informed that it was a fine songster. It is certainly too rare for anything to be known of it, in this respect, and some other bird was perhaps intended. The bright color of the forehead, and bend of the wing, occur also in *Myiophonus*, one of this sub-family.

Gen. HODGSONIUS, Bonap.

Syn. *Sylvania*, Blyth—*Bradypterus*, Hodgson, Gray, Zool. Misc. —*Bradybates*, Gray, Genera of Birds.

Char.—General structure of *Callene*, but the bill much more slender and straighter, less curved on the culmen, distinctly notched; a few short strong rictal bristles; wings short, moderately rounded; 4th and 5th quills equal and longest; tail rather long, rounded; tarsus long, entire; feet large; toes slender; middle toe elongate; laterals nearly equal; claws moderate, slightly curved.

341. Hodgsonius phænicuroides, HODGSON.

Bradypterus apud HODGSON, GRAY, Zool. Misc., and Cat. Birds of Nepal.—J. A. S., XVI., 136. *BLYTH, Cat. 1052—HORSF., Cat. App. 643.

THE WHITE-BELLIED SHORT-WING.

Descr.—Male, upper parts uniform dark cyaneous or deep slaty blue; beneath similar, but paler, and passing into white on the middle of the belly; winglet tipped white; tail black, all, except the central part, ferruginous on the basal half; wings blackish; under tail-coverts cyaneous, edged with white.

Bill dusky, reddish at the gape; legs pale red-brown; irides dark brown. Length $7\frac{1}{2}$ inches; extent $9\frac{1}{2}$; wing 3; tail $3\frac{3}{8}$; bill at front $\frac{11}{20}$; tarsus $1\frac{1}{8}$.

The female is wholly brown above, paler brown below, passing to albescent on the middle of the belly and with a slight rufous tinge on the base of the caudal feathers.

This bird has considerable affinities for the Redstart group, and particularly, I think, to the Shama (*Copsychus macrourus*); and it appears to be one of the numerous links that bind together the Thrushes and the *Sylviadæ*. Blyth, indeed, places it with the *Copsychus* group; but, taking all its characters, and its near relationship to *Callene*, I prefer retaining it here, as does also Moore.*

It is a rare bird, and has only as yet been found in Sikhim. I did not myself observe it, but it was described to me as haunting thick underwood.

WHISTLING THRUSHES.

It is generally agreed that these fine birds show more affinity to *Pitta* than to the true Thrushes or Blackbirds. Temminck, indeed, described one as a *Pitta*. They are birds of rather large size, black plumage, glossed with blue; some have black, others yellow bills; and they have been divided into *Arrenga*, Lesson, for the black-billed, and *Myiophonus* for the yellow-billed species. The blue shoulder-spot has been already seen, in a slight degree, in *Callene*, and is repeated through many of the Ground Thrushes. Their flight is tolerably vigorous.

Gen. MYIOPHONUS, Temm.

Syn. *Myiophaga* and *Arrenga*, Less.

Char.—Bill large, strong, compressed, of moderate length, nearly straight, strongly hooked at the tip, and slightly notched; rictal bristles almost wanting; nares round, with some frontal plumes and hairs at their base; wings long, rather pointed; 4th and 5th quills nearly equal, 5th longest; tail moderate, even or slightly rounded; tarsus long, stout, entire; feet strong, middle toe long; laterals short, nearly equal; claws strong, well curved.

* Note—P. Z. S. 1854.

342. Myiophonus Horsfieldii, Vigors.

P. Z. S., 1831—Gould, Cent. Him. Birds, pl. 20—Jerdon, Cat. No. 79—Blyth, Cat. 927—Horsf., Cat. 282

The Malabar Whistling Thrush.

Descr.—General plumage black, more or less tinged with deep blue; a band on the forehead, not extending to the base of the bill, and shoulders, fine shining cobalt or smalt blue; some of the feathers of the breast and abdomen edged with the same.

Bill black; legs brown-black; irides dark brown. Length 11 inches; wing 6; tail $4\frac{3}{4}$; bill at front (through pendal plumes) $1\frac{1}{4}$; tarsus $\frac{7}{8}$.

This fine Thrush is found throughout all the forests of Southern and Western India, from near the top of the Neilgherries (6,000 feet) to almost the level of the sea. It is not found on the plateau of the Neilgherries, but at Coonoor, Kulhutty, Kotagherry, &c. It is common in Coorg and the Wynaad, and prefers moderate elevations; but I have killed it in Malabar at the foot of the chain of ghâts. I have also seen specimens from the Pulney Hills, and Travancore; but it is not found in any of the forests of the Eastern Ghats, nor in Central or Northern India. It especially delights in mountain torrents, and if there is a water-fall, it is sure to be found there. It feeds on various insects, earth-worms, slugs, shells, and also on small crabs, which I have very frequently found constituting its chief food; and the remains of legs, &c., of these crustacea are generally found on the rocks at the edge of every pool of water frequented by it. I once procured its nest, placed under a shelf of a rock on the Burliar stream, on the slope of the Neilgherries. It was a large structure of roots, mixed with earth, moss, &c., and contained three eggs of a pale salmon or reddish-fawn colour, with many smallish brown spots. I kept a bird, which I had wounded slightly, for some weeks, feeding it on earth-worms and snails, and every morning before sunrise I would hear its fine whistle. Its song consists of four or five beautifully clear whistling notes, so like the whistle of a man or boy, as to be constantly mistaken for it; and it is known to many on the Neilgherries as the Whistling Thrush. It would be a highly desirable and interesting

cage bird. Allied to *M. Horsfieldii*, is *M. cyaneus*, Horsfield, the *Pitta glaucina* of Temminck, from Java.

343. **Myiophonus Temminckii**, Vigors.

P. Z. S., 1831—Gould, Cent. Him. Birds, pl. 21: Blyth, Cat. 926—Horsf., Cat. 281.

Kastura of the hills, (Royle)-*Kaljit*, of the Doon, (Hutton)—*Chamong-pho*, Lepch — *Tetiman*, Bhot.

The Yellow-billed Whistling Thrush.

Descr.—General hue black, richly overlaid with cobalt or smalt-blue on the wings and tail; and the feathers of the whole head and neck, back, breast, and abdomen, centred with glistening cobalt-blue; shoulder of the wing, deep glistening blue, and the wing-coverts with some white specks on their tips.

Bill pale yellow, dusky on the culmen; legs dark brown; irides dark brown. Length 13 inches; wing $7\frac{1}{4}$; tail $5\frac{1}{2}$; bill at front $1\frac{1}{4}$; tarsus 2.

This Yellow-billed Whistling Thrush is found throughout the Himalayas from Bootan to Simla, and still further west to Afghanistan; also eastward, in the Khasia hills, in Arrakan, and Tenasserim.

It is common at Darjeeling, and is found from the lowest valleys to at least 8,000 feet of elevation; Hutton states that it extends up to the snows at Simla. Like the last species, it is fond of frequenting the beds of streams, and may generally be seen on a rock in the midst of some roaring torrent, where it feeds on the larvæ of *Libellulæ*, and some other water-insects, and may often be seen on an adjacent rock to its near ally, the Water-dipper (*Hydrobata asiatica*). Hutton remarks that it "is as often found in open rocky spots, on the skirts of forests, or among the woods, loving to jump upon stones or rocky pinnacles, from whence he sends forth a sort of choking chattering song, if such it can be called, or, with an up-jerk of the tail, hops away with a loud musical whistle, very much after the manner of the Blackbird." Vigne says that "its musical whistle is the sweetest note heard in the hills." It is not at all like the whistling of a man, as that of its Malabar congener; but is a pretty, slow measured, song.

I have had its nest and eggs brought me; the nest is a solid mass of moss, mixed with earth and roots, of large size, and placed (as I was informed) under an overhanging rock, near a mountain stream. The eggs were three in number, and dull green, thickly overlaid with reddish specks.

Hutton describes them as "greenish ashy, speckled with roseate specks, confluent at the larger end;" further, he says, "it selects some high, towering, and almost inaccessible rock, forming the side of a deep glen, on the projecting edges of which it constructs its nest." It is known both at Darjeeling and Simla as the Hill Blackbird; the real Blackbird, *Merula boulboul*, being ignored as such.

Horsfield states that the food of *Myiophonus cyaneus* of Java consists almost exclusively of berries. This is quite inconsistent with the habits of the two Indian species of the genus, and is probably a mistake. Nearly allied is the Black-billed *M. cæruleus,* Scopoli, from China; and *M. flavirostris*, Horsf., from Java.

The next group consists of a remarkable series of birds, of bright and gorgeous plumage, more so perhaps than any other of the *Dentirostres;* being mostly variegated with green, blue, and red. They are all very similar in form, being long-legged and short-tailed Thrushes, not very elegantly shaped; and feeding on the ground on Coleoptera, ants, and other insects. They composed the genus *Pitta* of Vieillot and other authors, of which the following are the characteristics:—

Bill moderately long, strong, compressed, wider at the base; tips slightly hooked, and with a distinct notch; culmen keeled, gently curved; nostrils lateral, placed in a fossa, half-covered by a membrane; no rictal bristles; wings moderate, short; tail very short, even; tarsus long, slender, almost entire, obscurely scutellated posteriorly; feet moderate, middle toe long, laterals unequal, hind toe short; claws moderate and slightly curved.

The birds of this genus take wing but seldom, and their flight is weak and irregular. Three species are found within our limits; but as we go further eastward, through Burmah and the Malayan peninsula to the eastern islands, they increase both in number of species and in brilliancy of plumage. They extend to Australia, three species being found there. Several genera have been, of late, founded out of the old genus, *Pitta*.

Gen. Hydrornis, Hodgson.

Paludicola olim, Hodgs.; *Hydrornis*, Blyth.

Char.—Bill large, very robust, tolerably hooked at the tip; wings short, rounded; 1st quill short; 5th, 6th, and 7th nearly equal and longest; of large size; otherwise as in the characters of the group. It constitutes the first division, *Gigantes*, of Bonaparte's genus *Brachyurus*.

344. Hydrornis nipalensis, Hodgson.

J. A. S., VI., 103—Pitta nuchalis, Blyth, J. A. S., XI., 188—and XII., 961—Horsf., Cat. 245—Blyth, Cat. 904.

The Large Nepal Ground-thrush.

Syi-mya, Nepal—*Toot-pho*, Lepch.

Descr.—Plumage above dingy green, passing into fulvescent brown on the scapulars and wings; nape and back of neck verditer-blue; occiput greenish; forehead, crown, and sides of head, with all the under parts, dull rufous or rusty, palest on throat; vent and under tail-coverts fulvescent, in some almost albescent; lining of wings buff and dusky. Hodgson described the chin as often hoary, and a black triangular spot on each side, behind the ear, united in front by a gular band of the same hue. This is evidently caused by the base of the feathers of those parts being blackish, and is not seen except when the feathers are exposed, which, however, perhaps the living bird has the power of doing, as the *Orthotomus* exposes the similarly-formed black neck-spot. The sexes are nearly alike, but the female is duller, with the nuchal spot greenish, and the back more mixed with rufous. Hodgson says that the female has the black gular band interrupted.

Bill dusky, fleshy at the base; legs ruddy flesh-coloured; nails long, whitish; irides lightish brown. Length $9\frac{1}{2}$ to 10 inches; extent 16; wings 5; tail $2\frac{3}{4}$; tarsus $2\frac{1}{2}$; bill at front 1.

This Large Ground-thrush is found in the S. E. Himalayas, in Nepal and Sikhim, and also in Arrakan, and also in the hill ranges of Assam. It is not very rare in the warmer valleys about Darjeeling, being generally found near the banks of streams, in forest, or thick underwood. Hodgson tells us that it feeds in swamps

and rills, on various hard insects. I found the remains of insects in those which I examined. Hodgson further remarks that it flies very badly, and is easily caught; and that it never perches save at night, and then only on low bushes. He examined the anatomy, and states that in this respect it resembles Thrushes generally; but that the intestinal canal is longer, being 30 inches in length.

To this group belongs *P. cærulea*, Raffles, of the Malayan peninsula and Sumatra; and *P. maxima*, Forsten, from Gilolo, with blue shoulder-spots, white breast, and red abdomen.

Gen. PITTA, Vieill. (as restricted.)

Char.—Bill moderate; tip slightly forked; wings moderate, the 2nd and 3rd, or 3rd and 4th, quills being the longest; 1st a little shorter than 4th. This forms the division *Brachyuri*, Bonap.

345. Pitta Bengalensis, GMEL.

P. triostegus apud BLYTH, Cat. 908—HORSF., Cat. 249—P. brachyura, JERDON, Cat. 80—GOULD, Cent. H. B., pl. 23—GRAY and HARDW., Ill. Ind. Zool., II., pl. 35, f. 2—ROYLE, Ill. Him. Bot., pl. 7, f. 3—*Nourang*, Hind., *i. e.* nine-colored bird—*Shumcha*, Beng.—*Pona-inki*, Tel.

THE YELLOW-BREASTED GROUND-THRUSH.

Descr.—Head olivaceous-fulvous, with a median black stripe from the base of the bill to the back of the neck, meeting another black band that passes through the ears; a white superciliary line extending also to the nape, but not quite meeting its fellow; the whole back, rump, scapulars and wing-coverts, dull blue-green; the lengthened upper tail-coverts pale blue; a pale azure-blue patch on the shoulder of the wing; quills black, with a white bar on the first six primaries, and the tip of all white or albescent; secondaries blue-green on the outer margin, increasing in extent inwardly; tail black, tipped with dull blue; beneath, the chin, throat, and the sides of the neck below the ears, white; the rest of the lower parts isabelline or fulvescent, with the middle of the lower part of the abdomen, the vent, and the under tail-coverts, scarlet.

Bill black; legs ruddy-yellow or yellowish-pink; irides hazel-brown.

Length about 7 inches; wing $4\frac{1}{4}$; tail $1\frac{7}{10}$; bill at front $\frac{13}{20}$; tarsus $1\frac{1}{2}$.

This prettily plumaged Ground-thrush is found throughout the whole of India, from the sub-Himalayan range to Cape Comorin. It is also found in Ceylon, but never on the eastern side of the Bay of Bengal. It is most common in forest country, but is also found occasionally in every part of the country that is tolerably wooded. In the Carnatic it chiefly occurs in the beginning of the hot weather, when the land-winds first begin to blow with violence from the west; and the birds, in many instances, appear to have been blown, by the strong wind, from the Eastern ghâts, for being birds of feeble flight, they are unable to contend against the strength of the wind. At this time they take refuge in huts, out-houses, or any building that will afford them shelter. The first bird of this kind that I saw had taken refuge in the General Hospital at Madras; and, subsequently, at Nellore, I obtained many alive under the same circumstances. Layard states that in Ceylon it is migratory, coming in with the Snipe, *i. e.* in the beginning of the cold weather. He further remarks that it is shy and wary, resorting to tangled brakes and ill-kept native gardens. It seldom alights on trees. It is generally found single; but I have seen three or four together; and it feeds chiefly on the ground, on various coleopterous insects. It progresses by hopping, as do others of this family; and is in general a most silent bird, though it is said to have, at times, a fine loud whistling note. Its Singalese name is said to be derived from its call *Avitch-i-a*, pronounced slowly and distinctly. Blyth was informed that it has a screeching note. Nearly allied to this are *P. cyanoptera*, from Burmah; *P. malaccensis*, from Malacca; *P. irena*, T., from Timor, and some others.

The next species is placed by Bonaparte in his division, *Melanocephali.*

346. **Pitta cucullata**, HARTLAUB.

P. rhodogastra, HODGS., J. A. S., XII., 961 (the young bird)—P. nigricollis, BLYTH, J. A. S., XII., 960—Ann. Nat. Hist., 1844, pl. 20—BLYTH, Cat. 960—HORSF., Cat. App., 652—*Phattim pho*, Lepch.

The Green-breasted Ground-thrush.

Descr.—Crown dark rufous-brown; chin, throat, sides of head, and neck all round, black; back fine glossy dark green; bend of wing, and upper tail-coverts, bright verdigris-blue; a large white patch on the primaries, which are black; lower parts bluish-green or sea-green; vent, and under tail-coverts, vermillion.

Bill black; legs pale reddish; irides brown. Length 7 inches; wing $4\frac{1}{4}$ or $\frac{1}{2}$; tail $1\frac{5}{8}$; tarsus $1\frac{1}{2}$; bill at front $\frac{13}{16}$.

The young bird has some white on the wing-coverts, a white band on the throat, and is dull brown beneath, mixed with green.

This very handsome Ground-thrush is found in Nepal and Sikhim, extending into Assam, Burmah, and the Malayan peninsula. It is rare in the S. E. Himalayas. I only procured one specimen, which was killed by a Lepcha, when seated on her nest, on the banks of the great Rungeet river, about 1,200 feet above the sea. The nest was composed chiefly of roots and other fibrous matter, with a few hairs, and contained three eggs of a faint greenish-white, with a few reddish and some fawn-colored spots. To this group belong several species from Celebes, New Guinea, and the Philippines.

Another group, *Erythrogastri* of Bonaparte, contains some of the most richly coloured of the series; among them *P. granatina*, from Malacca.

The *Pitta* of Bonaparte has the tail somewhat longer than in the last, and slightly wedge-shaped, and the body is banded beneath. To this belong, *P. cyanura* from Malacca, and *P. hyans*. T. (*Boschi*, Müll.), from Sumatra.

The next group is that of the Dippers or Water-ouzels, so well known from their habit of diving to the bottom of streams, and running along to pick up their food.

Gen. Hydrobata, Vieillot.

Syn. *Cinclus*, Bechst.—Water-ouzel, or Dipper.

Char.—Bill of moderate length, nearly equal to the head, straight, cultrate, slightly ascending; no rictal bristles; nostrils

marginal, longitudinal; wings concave, 1st very short, 3rd and 4th sub-equal and longest; 2nd scarcely shorter; tail short and even; tarsus moderate, longer than middle toe; feet moderate; lateral toes nearly equal, hind toe short; claws tolerably curved.

The Dippers are one of the most interesting groups of birds among the whole class of Perchers, from their well known and peculiar habits of procuring their food under water. They are birds of rapid flight, and are believed to use their wings for progression under water. They form a large nest of moss and grass, with a hole at one side, placed on a bank of a stream, among the roots of a tree, or a crevice in a rock, and have five or six white eggs. They are said, in Europe, to have two or three broods in the course of the year. Most modern systematists agree in placing them close to *Pitta*, and in the same family. Bonaparte makes a distinct family, *Cinclidæ*, in which he classes *Eupetes* (a remarkable Malayan bird), *Grallina*, *Enicurus*, *Hydrobata*, and *Zoothera*, placing the family between *Motacillidæ* and *Pittidæ*. *Eupetes*, with a Cincline bill, has the highly rounded wings, &c., brown and dense flimsy plumage, of a Timaline form. *Epthianura* of Australia is also placed next *Eupetes* by Bonaparte; but Gray places *Grallina*, *Enicurus*, and *Epthianura* in his *Motacillinæ*. The Dippers are found in Europe, Asia, and America. In India they are confined entirely to the Himalayan Mountains.

347. **Hydrobata Asiatica**, Swainson.

Cinclus Pallasii apud Gould, Cent. H. B., pl. 24—C. tenuirostris, Gould apud Bonap.—C. maculatus, Hodgs., Gray, Zool. Misc. (young)—Blyth, Cat. 913—Horsf., Cat. 251—*Nambong karriak*, Lepch.—*Chubia nakka*, Bhot.

THE BROWN WATER-OUZEL.

Descr.—Plumage uniform dull brown; bill black; legs pale brown; soles of the feet yellow; irides dark brown.

Length about $8\frac{1}{4}$ inches; wing 4; tail 2; bill at front $\frac{13}{16}$; tarsus $1\frac{3}{4}$.

The young bird is mottled and spotted with dusky and whitish; the wings are edged with white, and the tail has a narrow white

tip; the whole plumage being remarkably like that of a young or female *Petrocincla*. It differs from the true *Pallasii* of Temminck, from E. Siberia and Japan, according to Bonaparte, in being paler in color, and with the bill much more slender.

The Indian Dipper is found throughout the Himalayas, frequenting streams and rivers. It is not rare at Darjeeling, in the Rungnoo, the Little Rungeet, but especially in the Great Rungeet river; and from 1,200 to 5,000 feet of elevation. You generally see it perched on a rock, in the middle or side of a stream, or flying rapidly along the course of the stream. I once surprized one in a pool of shallow water in the bed of the Rungeet, which I came on suddenly, and from out of which it rose, as much to my astonishment as its own. I afterwards saw it on several occasions plunge into the water, both from the bank, and from a rock, and remain some time under water, issuing forth at a distance from the spot where it had entered. It feeds on various water-insects and larvæ; also shells, when it can get them, and, it is said, the ova of fishes. It must breed very early in the season, for I procured some young specimens in March and April.

348. **Hydrobata cashmiriensis**, GOULD.

P. Z. S., 1859, p. 494.—H. cinclus apud ADAMS, P. Z. S., 1858.

THE WHITE-BREASTED CASHMERE DIPPER.

Descr.—Crown of head, ear-coverts, and mantle, brown, darker on the upper back and wing-coverts; lower back, and tail-coverts, grey, with a dark central mark on each feather; wings and tail blackish-grey; throat and breast white; upper part of the abdomen brown, greyish on the flanks and vent; tarsus brown. Length 7 inches; wing $3\frac{7}{8}$; tail $2\frac{1}{4}$; tarsus $1\frac{1}{3}$; bill at front $\frac{7}{8}$.

This species, which appears to be the Asiatic representative of the common European Dipper (to which, indeed, it is very closely allied, if distinct), is only found in the streams of the higher mountain ranges of Cashmere, whence it was brought by Dr. Adams.

349. **Hydrobata sordida**, GOULD.

P. Z. S., 1859, p. 494.

The Black-bellied Cashmere Dipper.

Descr.—Crown of head, back of neck, throat, and chest, chocolate-brown, lightest on the throat and breast; back, abdomen, and tail, deep brownish-black, darkest on the abdomen; wings nearly the color of the back.

Length 6¼ inches; wing 3¼; tail 2; tarsus 1⅛; bill ⅞.

This is apparently the Asiatic representative of the *H. melanogastra* of Europe, and, like the last, is from the mountains of Cashmere, where procured also by Dr. Adams.

Besides the common Dipper of Europe, *Hydrobata cinclus*, and the *melanogaster*, of Eastern Europe, there are recorded *H. leucogaster*, from Western Siberia, and true *Pallasii*, from Eastern Siberia; and there are two in the New World, one from the North, and the other, with a white head, from Peru. With Bonaparte, I agree that the remarkable Australian form *Grallino* comes near this group, and serves to link it with *Enicurus* of the *Motacillidæ*. It appears to me, also, that *Origma* of the same region has affinities with this group.

Gen. Zoothera, Vigors.

Syn.—*Myiothera*, Tem. (partly), and *Myiophaga*, Less. (partly).

Char.—Bill longer than the head, compressed, slightly curved; upper mandible with hooked tip, produced over the lower; wings somewhat short; 1st quill very short; 4th and 5th sub-equal and longest, 3rd nearly as long; tail short, even, broad; tarsus moderate, about equal to the middle toe; lateral toes nearly equal, hind toe somewhat long; claws moderately curved.

These birds form a genus of a few remarkable species, which are usually classed with the *Merulinæ*. Bonaparte latterly classed it with the Thrushes; but, formerly, I think, he, more discriminately, placed it among his *Cinclidæ*. He makes it consist of four species, one of which, *Z. cinclops*, is, says the Prince, intermediate between *Zoothera* and *Cinclus*. This has been since removed from *Zoothera*, and forms the type of the genus *Cinclops*. Blyth also places *Zoothera* with the Thrushes, as do Gray and Horsfield. It is, indeed, a link between the two sub-families, and might be classed with either; but its short-tail, *Pittine* bill, and its

affinity for *Anthocincla*, Blyth, a remarkable new bird from Burmah, has decided me to place it at the end of this family.

350. Zoothera monticola, Vigors.

Gould, Cent. H. B., pl. 22—Blyth, Cat. 928—Horsf., Cat. 263—Turdus rostratus, Hodgson.

The Large Brown Thrush.

Descr.—Above, dark olive-brown, tinged with dusky-cinerous, browner on the wings, and the feathers faintly edged darker; beneath, chin and throat white; sides of the neck olive-brown, with dark centres to the feathers, tending to become white, with dark spots, on the centre of the breast; middle of the abdomen, vent and under tail-coverts, white, with olive-brown specks; flanks and thigh-coverts tinged with pale-ashy.

Bill horny-brown; legs pale brown, irides dark brown. Length varies from 10 to 12 inches; wing from $5\frac{1}{4}$ to 6; tail 3 to $3\frac{1}{4}$; bill at front $1\frac{1}{4}$ to $1\frac{1}{2}$; tarsus $1\frac{1}{4}$ to $1\frac{1}{2}$.

This remarkable bird is found all through the Himalayan range, from Mussooree to Darjeeling, but nothing is known of its manners. The bill occasionally becomes unusually long, as in a specimen in the Asiatic Society's Museum. The coloring reminds the naturalist of many of the true Ant-Thrushes of S. America.

Blyth has described another species, *Z. marginata*, from the Khasia hills and Arracan; and Layard another from Ceylon, *Z. imbricata*. *Myiothera andromeda*, Temm., from Java and Sumatra, appears, from the figure, in Pl. Col. 392, to be rightly placed as a *Zoothera* by Hartlaub and Bonaparte.

The remainder of the family of short winged Thrushes consists chiefly of the so-called Ant-Thrushes of S. America, *Formicarius*, *Formicivora*, *Grallaria*, *Myiothera*, &c., of authors. They are mostly small birds of brown and spotted plumage, as are the Wrens and allied birds, such as *Merulaxis*, *Scytalopus*, *Thriothorus*, &c., which also enter this family. Gray includes among his *Formicarinæ*, several Malayan genera, which are more generally assigned to the Timaline group, such as *Malacopteron*, *Alcippe*, *Trichastoma*,

* Since the above was in type, I have obtained the egg of *Zoothera marginata*, like that of *Pitta*, white, with a few rusty brown spots.

Macronous, *Dymocataphus*, *Turdinus*, *Setornis*, and *Turdirostrum*. Two of these have representatives in India, and their situation in the natural system will be considered hereafter.

Sub-fam. MERULINÆ, True Thrushes.

Sny. *Turdinæ*, Gray and others.

Bill of moderate length, rather stout, narrow throughout, compressed at the tip; culmen straight at the base, slightly curved at the tip, and notched; nostrils basal, exposed; gape with a few very slight rictal bristles; wings tolerably long and broad, somewhat pointed; 1st quill very small, 3rd and 4th usually sub-equal and longest; tail moderate, nearly even; tarsus of moderate length, the anterior scutæ more or less united; toes long and stout, lateral toes nearly equal; claws moderately curved, stout.

The birds composing this sub-family, the Thrushes and Blackbirds, are found in every part of the world. They are mostly of plain and sombre colours, many black; others brown, spotted beneath; in one group more or less blue. They are chiefly sylvan in their habits, frequenting woods and gardens, a few only preferring open country. They feed usually on the ground, on which they hop, their chief food being insects, mollusks, and earthworms; with several (especially in winter), also fruits and berries. At this season, too, several are gregarious. Their flight is somewhat undulating, but strong and vigorous.

The true Thrushes unite to the *Myiotherinæ*, as already noticed; they also appear to join, on the other side, with the *Timalinæ* by means of some of the American short-winged Thrushes, such as *Mimus;* and to pass into the *Saxicolinæ* by some of the African Thrushes related to *Orocetes:* viz., *Bessonornis* and others.

The first group comprises the Blue Rock-thrushes (which may be called the Saxicoline Thrushes) and their affines.

Gen. PETROCOSSYPHUS, Boie.

Syn. *Petrocincla*, Vigors. Rock-thrushes.

Char.—Bill moderate or rather long, slender, straight, moderately hooked at the tip, entire, or with a faint indication of a notch; nostrils round, apert, with the frontal plumes advanced to their base; rictal bristles short, numerous; wings long, some-

what pointed, 3rd quill longest, 2nd and 4th only a little shorter; tail rather short, even; tarsus and toes moderate; the scutæ distinct; lateral toes very slightly unequal; claws small, slender, moderately curved.

The Blue Rock-thrushes are found over the greater part of the Old World (not in Australia); and frequent desert, rocky and open ground. There are only a few species, which very closely resemble each other.

351. Petrocossyphus cyaneus, LIN.

Turdus apud LINNÆUS—BLYTH, Cat. 960—P. pandoo, SYKES, Cat. 64 (the male)—P. maal, SYKES, Cat. 65 (the female)—JERDON, Cat. 81—JERDON, Ill. Ind. Orn., pl. 20—P. longirostris, BLYTH, J. A. S., XVII., 150—P. affinis, BLYTH, Cat. 961—HORSF., Cat. 254—*Shama*, H., in the South of India,—*Pandu*, Mahr.—*Poda kachi-pitta*, Tel.—*Ningri-pho*, Lepch.

THE BLUE ROCK-THRUSH.

Descr.—Male, throughout of a dull indigo or Antwerp blue, more or less marked with dusky, and the feathers of the abdomen, vent, and under tail-coverts, pale tipped: in some specimens with a tinge of deep ferruginous on the feathers of these parts.

The female is dingy greyish-brown, with a faint blue or ashy tinge, greyer on the tail; some of the feathers edged with whitish, and the under-parts fulvescent-greyish, with dusky cross-bands; some being rufescent on the lower parts, especially on the vent and under tail-coverts.

In some the tail is nearly even, in others the outer tail-feathers are half an inch shorter than the penultimate pair.

Bill and legs black; irides deep brown. Length $8\frac{1}{2}$ to 9 inches; wing $4\frac{1}{2}$ to 5; extent 14; tail $3\frac{1}{4}$ to 4; bill at front $\frac{8}{10}$ to $\frac{9}{10}$; tarsus 1.

Colonel Sykes separated the Indian Rock-thrush from the European one, and in this is followed by Horsfield in his Catalogue. Blyth united them in his Catalogue, but subsequently described a *P. longirostris* from Cashmere, which he has since referred to the European race *cyaneus;* and on carefully examining specimens from Europe with Indian ones of *pandoo*, in company with Mr. Blyth, we

agreed that these could not be separated. Indian specimens are apparently deeper blue, but this may depend on season, this bird being only a winter visitant in India; and though, in some specimens, the bill is shorter than in those from Europe, yet others with equally long beaks are met with.

Mr. Blyth has lately also joined both his *affinis* from Darjeeling and Burmah, and *manillensis* from China and the Philippines, to the European species, making the following varieties:—a. *longirostris*, Bl., from Cashmere and Afghanistan, precisely the same as the bird from Europe; b. *pandoo*, Sykes, from Western and Southern India; c. *affinis*, Bl., from Sikhim, Lower Bengal, and Burmah; d. *manillensis*, Auct., from China and the Philippines.

In deference to Mr. Blyth's matured opinion, I have put *affinis* as a synonym of *P. cyaneus*; but I cannot do the same with *manillensis*, and I am in great doubts about the identity of *affinis*. It generally has the blue more vivid than in *cyaneus*; the dusky markings being less developed; there is generally more or less deep ferruginous here and there, sometimes on the rump, and occasionally in the lower plumage; and the outer tail-feathers are generally shorter than the penultimate pair. The female, too, is generally more tinged with blue above, and the ground-tint of the lower-parts are more rufescent than in the female of *cyaneus*. The young bird has the light markings of the nestling plumage much more white above, and more rufescent beneath. Mr. Blyth himself was first led to change his previous opinion of the diversity of these two races, by shooting two birds in Burmah, in succession, upon the same tree, on the following days, close under a deep rock-cutting, one of which had the outer tail-feathers shorter, the other not; and which he would have referred respectively to *P. affinis* and *P. cyaneus*, if he had received them from different localities.

It will be observed that, of these races or varieties, each race occupies a peculiar range of longitude; *cyaneus* (with *pandoo*) on the west range, without any admixture of rufous; *manillensis* on the extreme east, with the whole abdomen chesnut; and *affinis*, between the two, sometimes with, sometimes without, any rufous. When specimens in summer plumage from various points along the North of Asia have been compared, perhaps a more correct judgment

will be obtained of the distinctness or otherwise of these races. Is it possible that *affinis* can be a fertile hybrid between *manillensis* and *cyaneus*?

The Blue Rock-thrush, as given in our synonyms, inhabits the whole of India. The variety without any admixture of rufous in the N. W. Himalayas, and throughout the West and the South of India; the variety, *affinis*, in the S. E. Himalayas, occasionally in Lower Bengal, and extending into Assam and Burmah.

The former variety is common on the Neilgherries, in open and rocky ground; more rare in the Carnatic, on stony hills; very common in the Deccan and Central India; and, according to Mr. Elliot, very abundant along the Northern portion of the West coast. Hence it extends through N. W. India to Sindh, Cashmere, and the N. W. Himalayas. In the Deccan, and the west of India, it is quite a familiar bird, perching on a house-top, feeding about stables, and frequently even entering verandahs, and sheltering itself during the heat of the day on beams and the eaves of houses. It always feeds on the ground, chiefly on coleoptera, ants, &c., and is quite solitary in its habits. As previously noticed, it is only a winter visitor to India, coming in about October, and retiring to the North in April. It has a very sweet song, which it warbles forth, even in India, for some time before it quits the country, not whilst it is feeding, but during the heat of the day where it happens to have taken shelter. It is supposed to be the 'Sparrow' of our English version of the Scriptures, that sitteth alone on the house-top. It is found over most of Europe and Asia, and the North of Africa. It is called the *Sháma* on theBombay coast and the Deccan, where it is caught and prized as a songster; the real *Sháma* being the *Copsychus macrourus*.

I observed the Eastern variety only at Darjeeling, in open forest and cleared land, and it appeared to me to be much more shy than the other, and shuns the haunts of man. Blyth tells me, however, that he was struck with the familiarity of this bird in Burmah; and Tytler assured him that it visited the station of Barrackpore, near Calcutta, every season, where Blyth also states that he has since observed it.

Lesson has a *Petrocincla castaneocollis,* from the Himalayas, which I cannot identify; so add a brief description taken from the Revue Zoologique, 1840.

Male, above undulated with brown, black and grey; the upper tail-coverts ferruginous; cheeks black; fore-part of the neck, from the chin, maronne-red: lower neck and breast whitish; flanks and belly ferruginous; tail and wings brownish. The female is brownish above, beneath whitish-grey, with slight brown undulations.

This may be a state of *Orocetes erythrogaster;* but it does not sufficiently correspond.

There are no other recorded species of *Petrocossyphus* besides those mentioned here.

Gen. Orocetes, Gray.

Syn. *Petrophila*, Swains.

Char.—Bill moderately short, straight, tolerably curved at the tip, which is entire; nostrils overhung by a few nareal bristles; rictal bristles longer and stronger than in the last genus; wings somewhat short; 3rd quill longest, 2nd sub-equal to it; tail even or slightly rounded; tarsus and toes a little shorter than in *Petrocossyphus;* tarsal scutæ indistinct; lateral toes unequal.

This genus was instituted by Swainson for the *Petrocincla cinclorhyncha* of Vigors; which, as Mr. Blyth remarks, is of a more Chat-like form than the last birds, and approximates *Turdus saxatilis* of Europe. The following species, described and figured as a *Petrocincla,* is rightly placed in this genus by Bonaparte.

352. **Orocetes erythrogastra,** Vigors.

Petrocincla apud Vigors—Gould, Cent. Him. B., pl. 13—Blyth, Cat. 959—Horsf., Cat. 252—P. rufiventris, Jard. and Selby, Ill. Orn., pl. 129—P. ferrugineoventris, Lesson—*Ningri-pho* Lepch.

The Chesnut-bellied Thrush.

Descr.—Head above, shoulders, and rump, bright light blue; back and wings duller blue, often more or less edged with whitish or

pale brown; lores, ear-coverts, and sides of neck, black; throat and fore-neck dull blue, edged with dusky-greyish; breast, belly, neck, and under tail-coverts, deep chesnut rufous; tail dull blue with the inner webs dusky.

The female is ashy-brown above, some of the feathers faintly edged darker; lores, ear-coverts, and sides of neck, mixed fulvous and brown; a slight superciliary stripe from the gape, and spot on the side of the neck, fulvous; beneath, the chin and throat, pale fulvous; the rest mottled brown and fulvous, each feather being fulvous, with a brown tip and bar.

Bill black; legs brown; irides dark brown. Length 9½ inches; extent 15; wing 5; tail 4; bill at front ¾; tarsus 1⅛.

In some adult males, there is a white patch apparent on the throat, formed by the base of some of the feathers, which is perhaps a sexual mark.

Young males have the head and neck brown, with pale spots; wings and tail blue, and the lower plumage fulvous, with dark bars. The young female is dusky-brownish, with light spots above; whitish beneath, passing to fulvous, with dark and rufous bars.

This Thrush has hitherto, I believe, only been ƒ und in the Himalayas,* generally at a considerable elevation. It \ not rare about Darjeeling, frequenting high forest, feeding on the ground on various insects, and, when disturbed, taking refuge in high trees.

It is not a typical species of *Orocetes;* having, by its more lengthened form and coloration, tendencies to the last genus, with which it has generally been placed.

353. **Orocetes cinclorhynchus**, VIGORS.

Petrocincla apud VIGORS—GOULD, Cent. Him. Birds, pl. 19—SYKES, Cat. 66—JERDON, Cat. 82—BLYTH, Cat. 963—HORSF., Cat. 256—*Krishen patti*, Nepal.

THE BLUE-HEADED CHAT-THRUSH.

Descr.—Male, head, nape, and shoulders of the wings, pale blue; lores, ear-coverts, back and wings, black, tinged with dusky-blue

* I have lately shot it on the Khasia Hills.

on the back, and on some of the wing-coverts and quills; a white wing-spot, formed by a white bar on the outer webs of the secondaries; rump and upper tail-coverts ferruginous; tail black, edged with blue; chin pale blue; breast, abdomen, and under tail-coverts ferruginous.

Female, brownish-olive above, yellowish-white beneath, tinged with rufous on the breast, and barred crosswise with olive-brown.

Bill brownish-black; legs reddish-brown; irides hazel-brown. Length $7\frac{1}{2}$ inches; wing $4\frac{1}{10}$; tail $2\frac{3}{4}$; bill at front $\frac{9}{10}$; tarsus?

This Thrush appears to inhabit the whole of the Himalayan range, migrating to the plains in winter, in small numbers. It also is found on the slopes of the Neilgherries, the upland forests of Malabar, and along the chain of Western Ghats as far north as the latitude of Bombay. It has been occasionally procured in the neighbourhood of Calcutta. It frequents forests and thickly-wooded districts, is usually solitary, though I have seen four or five together, and it appears to feed much on various fruits and berries. Mr. Blyth kept one in captivity for some time, and says that it has a sweet plaintive, and tolerably loud song, delivered in the manner of a Robin's song.

Allied to this bird is the genus *Petrocincla,* as restricted by Bonaparte, which includes the *P. saxatilis* of Europe, *P. eremita* of the Philippines, and two African species; and perhaps *Bessonornis,* with many species, all of them African, should be placed here rather than with the *Saxicolinæ.*

Gen. GEOCICHLA, Kuhl.

Char.—Bill moderate, stout, compressed, straight; culmen gently arched throughout, tolerably hooked at the tip, and slightly notched; nostrils lengthened; a small nude spot behind the eye; wings and tail moderate, or rather short; tarsus slightly lengthened; lateral toes short, nearly equal.

This group comprises several Ground Thrushes, with somewhat similar colours to the last birds; *viz.*, dull blue and ferruginous: but it also includes some coloured more like Blackbirds. They are peculiar to the Indian region.

354. **Geocichla cyanotus,** J. and S.

Turdus apud JARDINE and SELBY, Ill. Orn., pl. 46—SYKES, Cat. 63—JERDON, Cat. 84—BLYTH. Cat. 957—HORSF., Cat. 260—*Tin rang ka Kasturi*, H., *i. e.*, the Three-coloured Thrush. —*Yerra poninki*, Tel., *i. e.* the Red Thrush.

THE WHITE-WINGED GROUND-THRUSH.

Descr.—Head, nape, hind-neck, and sides of neck, ferruginous; the rest of the plumage above dull cyaneous or leaden; wings and tail dusky, the former with a white spot on the median wing-coverts, and the outer feather of the tail also tipped with white; lores white; ear-coverts white in the centre, continued down the sides of the neck, and with a brown spot above and below the latter, passing into ferruginous, and bordering the white of the ears; beneath, the chin, throat, and neck, white; the breast, abdomen and flanks, bright ferruginous, and the vent and under tail-coverts, white.

The female differs from the male only in the colours being less pure.

Bill blackish; legs fleshy-brown; irides dark brown. Length $8\frac{1}{2}$ inches; extent 14; wing $4\frac{1}{2}$; tail 3; bill at front $\frac{7}{10}$; tarsus $1\frac{3}{10}$.

The White-winged Ground-thrush is peculiar to the jungles of Southern India, extending as far as Goomsoor on the east coast, and to Bombay on the west side of India. It is most abundant in the forests of Malabar and Wynaad, but is not rare in the jungles of the Eastern ghâts. It prefers bamboo-jungles, feeds on the ground, and generally perches low. Its food is chiefly insects, such as ants, cockroaches, and beetles; but, not unfrequently, also stony fruit. It has rather a sweet song, not often heard, however. Mr. Ward procured the nest in N. Canara, made of roots and grass, placed at no great height from the ground; and the eggs, three in number, were pale bluish, speckled with brown.

355. **Geocichla citrina,** LATHAM.

Turdus apud LATHAM.—BLYTH, Cat. 956—HORSF., Cat. 259—T. Macei, TEMMINCK, Pl. Col., 445—T. lividus, TICKELL—T. rubecula apud MCLELLAND—*Dáma*, Beng.—*Hamshi-bong*, Lepch.

THE ORANGE-HEADED GROUND-THRUSH.

Descr.—The whole head, neck, and lower plumage, pale brownish-orange; the chin and throat paling and albescent; the rest of the upper plumage blue-grey; a small white wing-spot on the median wing-coverts, and the primary coverts tipped black; lower part of abdomen paling towards the vent, which, with the lower tail-coverts, is white.

Bill horny-black; legs fleshy; irides dark brown. Length $8\frac{1}{2}$ inches; extent $14\frac{1}{2}$; wing $4\frac{1}{4}$; tail 3; bill at front $\frac{3}{4}$; tarsus $1\frac{1}{4}$.

The female differs slightly, being tinged with olivaceous on the back, wings, and tail. A specimen in the Mus. As. Soc., Calcutta, from Dehra Doon, appears to be somewhat intermediate between this and the last species. The ears are mottled white and rusty; there is more white on the chin, and some on the breast and upper part of the abdomen; but this color appears to be accidentally present, several of the feathers of the back being also white.

This Thrush is found throughout the whole range of the Himalayas, not exceeding an elevation of from 4,000 to 5,000 feet. It is also found in most of the forests and well-wooded districts of Northern and Central India, extending rarely as low as North latitude 16°. I procured it from the jungles of the Eastern Ghâts, inhabiting the same locality as the last species, though much more rare. It has also been obtained in Goomsoor; in the neighbourhood of Calcutta, where quite common in the cold season; and in the forests of Central India. I procured specimens in Sikhim, but only in the warmer valleys. It extends through Assam to Burmah.

The Orange-headed Thrush keeps to woods and shady gardens; and, like the last, prefers bamboo-jungle. It feeds on the ground on insects, turning over the leaves to find them; and, as remarked by Blyth, often having its bill clogged with mud, from feeding in damp spots. It is shy and silent in general; but, during the breeding season, the male has a pretty song. Hutton found the nest at Mussooree in the forks of high trees, made of grasses, moss, stalks, and roots; and with three or four eggs, pale greenish, freckled with rufous, forming a sort of patch at the upper end.

Closely allied species are *G. innotata*, Bl., from the Andamans, Nicobars, and Penang, rather darker, and wanting the white wing-

spot; *G. rubecula*, Horsf., from Java; and *G. rubiginosa*, Mull., apud Bonaparte, from Malayana, if indeed this be distinct from Horsfield's bird.

The next species shows a different type of coloring, and leads to the Blackbirds.

356. **Geocichla unicolor,** TICKELL.

Turdus apud TICKELL—BLYTH, Cat. 954—HORSF., Cat. 261—Petroc-homochroa, HODGSON—*Desi Pawai*, H.—*Machasah*, Beng. *Poda palisa*, Tel.

THE DUSKY GROUND-THRUSH.

Descr.—Male, above uniform dusky slaty ash-color; chin nearly white; throat pale ashy; breast ashy; abdomen and lower tail-coverts white; under wing-coverts and flanks of abdomen ferruginous.

The female is olive-brown above, ashy about the rump; ear-coverts ashy brown, with light shafts; beneath, the chin and throat albescent, or very pale ashy, bordered by a dark stripe from the base of the lower mandible, and the feathers of the throat and neck streaked with dusky-brown; the breast and sides ashy-brown, tinged with fulvous, or olive-brown on the flanks; belly, vent, and lower tail-coverts, white.

Bill dusky-yellow; eyelids and gape yellow; legs brownish-yellow; irides brown. Length 9 inches; extent $14\frac{1}{2}$; wing $4\frac{1}{2}$; tail $3\frac{1}{8}$; bill at front $\frac{11}{16}$; tarsus $1\frac{1}{8}$.

This Ground-thrush is found throughout the whole extent of the Himalayas, migrating in winter to various of the more wooded districts in the plains of India. It is tolerably common about Calcutta: Tickell procured it in Central India; and I obtained it from the Eastern Ghâts and the Deccan, but I did not find it in the Malabar forests. It appears to be more abundant in the N. W. Himalayas than towards the South-east; and it is not common in Sikhim. Adams states that it is the 'Song Thrush' of Cashmere; with a song something like that of the Blackbird, but of fewer notes, and not so much varied. Hutton obtained the nest at Mussooree in June, made of roots and moss, usually placed against the body of a tree, where some twigs jut out, or on a horizontal branch;

the eggs, three or four in number, are dull greenish-white, speckled, blotched, and spotted with rufous.

Bonaparte, in his Conspectus, includes in this genus, *Merula castanea* and *M. nestor* of Gould, the former Indian, and the latter Australian; but I think that these rank much better with the Blackbird group.

The next two birds, which I place together, are intermediate between the Ground-thrushes and the Blackbirds, the males being black and white and the females more or less olive-brown above. To this type, Bonaparte has given the name of *Cichloselys*, of which *Turdus cardis*, Tem., is the type. Hodgson, however, appears previously to have named the group *Turdulus* (as a division of *Oreocincla*), with *Turdus Wardii* as the type. As these two forms appear to me to be the same, I shall adopt Hodgson's name.

Gen. TURDULUS, Hodgson.

Syn. *Cichloselys*, Bonap.

Char.—Bill rather short, something like that of *Geocichla*, generally yellow; tarsus rather short. Males coloured black and white; females dingy olive or brown. Otherwise as in *Merula*.

357. Turdulus Wardii, JERDON.

Turdus apud JERDON, Ill. Ind. Orn., pl. 8—2nd Suppl. Cat. 84 bis—BLYTH, Cat. 953—HORSF., Cat. 658—Zoothera melanoleuca, HARTLAUB—T. micropus and T. picoides, HODGSON.

WARD'S PIED-BLACKBIRD.

Descr.—Male, above with the whole head and neck black; eye-streak, a patch on the shoulders of the wings, tips of all the coverts, especially the medial coverts, white; tertiaries and secondaries also tipped white, the latter slightly, and the primaries narrowly edged with the same; upper tail-coverts also tipped; tail with the central feathers slightly white-tipped, the rest of the feathers successively more broadly so, but chiefly on the inner webs, and increasing in amount to the outermost, which has the inner web white for two-thirds of its length; the web black nearly to the tip.

The female is pale brownish above; the eye-streak, tips of the wing-coverts and of the tertiaries, fulvous-white; upper tail-coverts

and tips of the tail-feathers whitish; beneath fulvous-white, variegated with dusky; under tail-coverts pure white; the feathers of the throat, breast and flanks, with dusky spots; axillaries pure white.

Bill and legs yellow; irides brown. Length $8\frac{1}{2}$ to 9 inches; wing $4\frac{6}{10}$; tail $3\frac{3}{8}$; bill at front $\frac{3}{4}$; tarsus $1\frac{2}{10}$.

This Pied Blackbird is spread, but very sparingly, through the Himalayas, and during the winter in the plains of India. I first procured it, through Mr. Ward, from the foot of the Neilgherries, and afterwards obtained two specimens at Nellore in the Carnatic. Hodgson procured it in Nepal; and it has also been obtained in the N. W. Himalayas, where it is far from uncommon.

Those which I obtained at Nellore, in the beginning of April, were in a large mango-grove, and were feeding on the ground on various insects. They were probably then migrating to the Himalayas. Whether those birds met with, near the Neilgherries also migrate northwards, or are permanent residents on the Neilgherries, and other mountain ranges, cannot now be decided. It has also been found in Ceylon. I am not acquainted with the vocal powers of this handsome species.

358. **Turdulus cardis,** Temm.

Turdus apud Temminck, Pl. Col., 518—G. dissimilis, Blyth, J. A. S., XVI., 144—&. G. unicolor, old male, Blyth, olim (the female).

The Variable Pied-blackbird.

Descr.—Male—Whole head, neck, breast, and upper plumage, black; beneath, from the breast, white; the abdomen and vent with broad black bars; bill and legs yellow.

The female is olive-brown, tinged with cinereous, all the feathers being cinereous at the base; lores and ear-coverts brown, the latter with some of the feathers pale-shafted; a small supercilium and orbits buff; beneath, the chin and throat white, tinged ferruginous: a dark brown streak from the lower mandible down the sides of the neck; breast pale cinereous-brown, with some darker brown spots, which pass into the brown neck-stripe; the sides of the abdomen and of the breast rich bright ferruginous.

Bill dusky-yellow; legs yellowish; irides brown. Length $8\frac{1}{2}$ inches; wing $4\frac{1}{2}$; tail 3; bill at front $\frac{11}{16}$; tarsus $1\frac{1}{10}$.

The male of this Blackbird resembles the last; but differs in wanting the white markings on the upper plumage, being thus more allied to the true 'Blackbirds.'

The male bird has not, to my knowledge, been obtained in India; but the female was procured by Mr. Blyth in the neighbourhood of Calcutta, and, though at first considered distinct, was afterwards referred to *Geocichla unicolor* as a fully adult or old male. It is chiefly an inhabitant of China and Japan, probably migrating southward during the winter, and will most probably be found in Upper Burmah. The female so much resembles the coloration of *Turdus chrysolaus*, Temm., Pl. Col., 537, that, judging from the figure alone, I cannot help suspecting their identity.

Very probably, other species should be included in this group: among others, *Turdus sibiricus*, Gmel. (*T. leucocillus*, Pall.); *T. mutabilis*, Tem., of Java, formerly confounded with the last by Bonaparte; and, I strongly suspect, *Turdus interpres*, Kuhl, of Java, which Bonaparte classes as a *Geocichla*, and which chiefly differs from *T. Wardii*, in having a chesnut head and nape. Gray's *Turdus avensis*, which Blyth suspects to be allied to *Enicurus*, appears to me to be the same bird, or is, at all events, a very nearly allied species. Perhaps, also *T. terrestris*, Kittl., (T. *aonalasckkæ*, Gmel., *Myiothera passerina*, of the Leyden Museum) belongs here.

Gen. Merula, Leach.

Char.—Bill slightly lengthened, compressed at the tip, and notched; nostrils feathered at the base; rictal bristles short and strong; tarsus of moderate length; feet strong; wings long; 2nd quill shorter than 5th, which is nearly as long as the 3rd and 4th; tail square or nearly so.

The 'Blackbirds' form a group of nearly allied species, from most parts of the world, chiefly of black plumage, with yellow or orange-colored bills. They are remarkable for their fine power of voice. We possess three species in India, and Ceylon has another.

359. **Merula nigropileus**, Lafr.

Turdus apud LAFRESNAYE—BÉLANGER, Voy-dans L'Inde—BLYTH Cat. 949—M. brachypus, BLYTH—JERDON, 2nd Suppl. Cat. 83 bis—HORSF., Cat. 657 (in part)—*Kasturi*, H.—*Poda palisa*, Tel.

THE BLACK-CAPPED BLACKBIRD.

Descr.—Male, head, with the lores, cheeks and nape, deep black; back, rump, wings and tail, dark blackish, or fuscous-ashy, tinged with brown on the interscapulars; chin blackish: neck, all round to the nape (contrasting there strongly with the black of the crown); and the lower-parts brownish-ashy, paler on the belly, and passing to white on the vent; under tail-coverts mingled white and ashy.

Bill, eyelids, and gape, orange-yellow; legs brownish-yellow; irides brown. Length $9\frac{1}{2}$ inches; wing not quite 5; tail $3\frac{1}{2}$; tarsus $1\frac{2}{10}$; bill at front $\frac{8}{10}$.

The female differs in being altogether paler, the white of the vent spreading over more of the abdominal region, and the cap being dusky-brown. The tail is quite square, and the wings reach to less than two inches from the end of the tail. The color of this species fades very much in dried specimens, the black changing to dusky brown.

This Blackbird is found, occasionally, throughout the greater part of the South of India, in the plains during the cold weather only; but is a permanent resident on the hilly regions of the south, at a moderate elevation.

It is found in Coorg, Wynaad, and other parts of the Western Ghâts; also on the Eastern Ghâts of Nellore, and in some of the higher table-lands in Central India, as in Bustar and Jalna. I have killed it in my own garden, at Nellore in the Carnatic; at Tellicherry, and other places at low elevation. I never saw it on the Neilgherries.

Like other Blackbirds, it feeds much on the ground on snails, soft insects, and occasionally on fruit. At Nellore, I found that it lived almost entirely on the pretty *Helix bistrialis*, so common in hedge-rows in the Carnatic. I heard its song at Tellicherry towards the end of the cold weather, but only very early in the morning,

long before sunrise. I also heard it in Bustar in April, when it was breeding. It is not nearly so powerful, or so fine, as that of its Neilgherry or Ceylon congener. Mr. Ward obtained the nest in Sirci, in North Canara, made of roots, grass, &c., and with three eggs, pale blue spotted with brown.

360. Merula simillima, Jerdon.

Turdus apud Jerdon, Cat. 83—Blyth Cat. 948—Horsf. Cat. 657.

The Neilgherry Blackbird.

Descr.—Male, entirely black, conspicuously darker on the head and back of neck; somewhat lighter beneath, and tinged with dusky-brownish.

The female is dusky olive-brown above; the same, but lighter, beneath.

Bill, eyelids and gape, deep orange; legs dusky-yellow; claws yellow; irides dark brown. Length $10\frac{1}{2}$ inches; wing 5; extent 16; tail rather more than 4; bill at front nearly 1; tarsus $1\frac{1}{4}$.

The young bird resembles the female, but, as usual, is spotted.

This Blackbird is very similar to the European bird, more so perhaps than any other of the Eastern species, except the *M. Kinnisii* of the loftier elevations of Ceylon. It differs in being rather smaller in size, in being of not quite so deep a black, and in having yellow instead of brown legs. Horsfield, in his Catalogue, gives it as synonymous with *nigropileus;* and, under *M. mandarina*, includes a specimen from Madras. In his Appendix, however, he corrects this, stating that the specimen from Madras was my *simillima.* Others had, however, at one time considered *simillima* and *nigropileus* identical; but they are very distinct, as well in colour and structure, as in habit and distribution. The Neilgherry bird is much the larger of the two, more black, which in *nigropileus* contrasts very strongly with the rest of the plumage; the tail is more rounded, whilst it is even in *nigropileus*; and the females also differ very considerably.

The Neilgherry Blackbird has hitherto only been found on the summit of the Neilgherry and Pulney hills; but I have little doubt that it will be found on the other high plateaus of Southern India. It frequents the dense woods on the top of the

Neilgherries, coming to the skirts of the woods occasionally, and not unfrequently entering gardens. It feeds on Snails, Glow-worms, caterpillars, and other soft insects, but also lives a good deal on fruit, especially on the hill gooseberry (*Physalis peruviana*), now so perfectly acclimatized there. Its charming song, so like that of its European congener, is familiar to residents at Ootacamund; and, during the spring, is perhaps more heard in cloudy weather, and during slight rain, or towards an evening, than in bright sunshiny days. I have frequently found the nest, made of roots and moss, usually with four eggs, pale blue with dusky-brown spots.

361. Merula boulboul, Lath.

Lanius apud LATHAM*—BLYTH, Cat. 947—HORSF., Cat. 275—Turdus pœcilopterus, VIGORS—GOULD, Cent. Him. Birds, pl. 14—*Kasturi*, H.—*Patariya Masaicha*, Beng.—*Phoyiong-pho*, Lepch.—*Chomam*, Bhot.

THE GREY-WINGED BLACKBIRD.

Descr.—Male, above black, with a large wing-spot, formed by the outer webs of the middle quills, and the greater wing-coverts, pale silvery ashy-grey; beneath somewhat paler black, tending to dusky-ashy.

The female is brownish-ashy, paler beneath, and the wing-spot rufescent-whitish. The young, as usual, are spotted with pale rufescent; and in some very old birds the wing-spot becomes almost white.

Bill, orbits, and legs, deep yellow. Length $10\frac{1}{4}$ inches; wing $5\frac{1}{2}$; tail 4; bill at front $\frac{7}{8}$; tarsus $1\frac{1}{4}$.

The Grey-winged Blackbird is found throughout the whole extent of the Himalayas, keeping generally to an elevation from 5,000 to 8,000 feet. It is tolerably common, but rather shy, and does not show itself in the open, or in gardens, so much as the Neilgherry Blackbird; and its song is, I think, hardly equal to that of the Neilgherry bird. I obtained the nest at Darjeeling, made of twigs, roots, and moss, and with three or four eggs of a

* Bonaparte does not allow Latham's name to be applicable to this species, but appropriates it to an African *Dryoscopus*, and retains Vigors's name.

pale blue-green, with numerous light brown spots. It is occasionally caged in the N. W. Provinces, and Blyth has kept specimens for years in Calcutta. He tells me that it is sometimes, though rarely, captured in Lower Bengal.

The next species are allied to the *M. torquata* of Europe, and with it, too, have been separated under the name of *Thoracocincla*, which, however, I shall not adopt as a genus.

362. **Merula albocincta**, ROYLE.

Ill. Him. Bot., pl. 8, f. 3—T. albicollis, ROYLE—T. collaris, SOREL—BLYTH, Cat. 950—HORSF., Cat. 276—M. nivicollis, HODGSON.

THE WHITE-COLLARED OUZEL.

Descr.—Male, dingy black, slightly glossed above, and dull beneath; chin, throat, fore-neck, and wide collar round the nape and hind-neck, a somewhat dingy white; feathers of the vent white-shafted.

The female is dusky-brown, paler beneath; the throat white, with some dusky shafts, and a light greyish brown collar.

Bill and orbits deep yellow; legs dingy yellow; irides dark brown. Length 11 inches; wing $5\frac{3}{4}$; tail $4\frac{1}{2}$; bill at front $\frac{7}{8}$; tarsus $1\frac{3}{8}$. The tail is slightly rounded.

The White-collared or Himalayan Ring-ouzel is found throughout the Himalayas, but, generally, at a greater elevation than the last species. I only saw it, myself, at Tongloo in Sikhim, 10,000 feet high, in the month of April, and heard its song there. In winter it descends lower, but it is not a common bird near Darjeeling.

363. **Merula castanea**, GOULD.

P. Z. S., 1835—BLYTH Cat. 951—HORSF., Cat. 277—GRAY Gen. of Birds, pl. 56—Turd. rubrocanus, HODGSON.

THE GREY-HEADED OUZEL.

Descr.—Male, head, neck and throat, cinerascent-white, or greyish, dark and brownish on the crown, albescent on the throat and fore-neck; the rest of the plumage of a light chesnut-bay

colour, darker on the interscapulars, and paler and brighter beneath; wings dusky or blackish; the tertiaries edged with brown; tail blackish, the under tail-coverts mingled deep brown, or black, and white.

The female has the colours less intense; the head and neck more ashy brown, and the chin and throat alone nearly white; the wings and tail brown, with the outermost feathers of the latter, in some, tipped with white; lower tail-coverts brown and white.

Bill, orbits and legs, yellow; irides brown. Length $10\frac{1}{2}$ inches; wing $5\frac{1}{2}$; extent 16; tail $4\frac{1}{2}$; bill at front nearly 1; tarsus $1\frac{1}{4}$.

This anomalously coloured Ouzel, generally referred to the Blackbird group, was considered a *Geocichla* by Bonaparte, and its coloration shows a tendency to that group; but its general structure is more Meruline. It has, indeed, been considered by some to be a pale variety of *M. albocincta*, but I consider it distinct, and Hutton, who has had many opportunities of observing this bird, also denies this, asserting that the Grey-headed Ouzel associates in large parties (in the winter, I presume), whilst the Ring Ouzel is always solitary, like Blackbirds in general. I procured a few specimens of this Ouzel at Darjeeling, in winter only; and it is not very common there, frequenting open forests.

Other Eastern Blackbirds are *M. Kinnisii*, Kelaart, from the mountains of Ceylon, and *M. leucogaster*, Blyth, from the Munnipore hills. *M. mandarina*, from China, has been already alluded to, very like *M. vulgaris*, but with much stouter bill; *M. fumidus*, Müll., apud Bonaparte, from Sumatra, Java, Timor, &c., is the only other Eastern Blackbird recorded; but there are several from America. *M. vulgaris* of Europe has been found in Afghanistan, and is said to occur also in Cashmere, where Capt. Brownlow assured Mr. Blyth that it is common at an elevation of from 10,000 to 13,000 ft.: the late Lieut. Trotter assured the same naturalist that it decidedly does not occur in the Peshawur District. A very remarkable species, from Syria, with a sort of claw on the wing, was distinguished by the late Prince of Canino as *M. dactyloptera*.

The next group is that of the true Thrushes; and here, again, we find now recognised two divisions, the one typified by the Song

Thrush of Europe, and the other instituted for the Fieldfare and various Thrushes with the plumage less spotted.

Gen. PLANESTICUS, Bonap.

Char.—Bill much as in *Turdus*, usually pale-colored, and, perhaps, slightly more compressed; 2nd quill sub-equal to the 5th, shorter than 3rd and 4th; outer webs of 3rd, 4th, and 5th quills much emarginate; toes more unequal, the middle toe more elongate, and the laterals short.

The group, formerly separated, without a generic name, by Bonaparte, under the title of *Turdi erratici*, may be said to be intermediate to the Blackbirds and the true spotted Thrushes.

They generally have the plumage more colored in masses, but spotted on the breast in a few, and they are said to be more gregarious and migratory than the true Thrushes. Gray, in his last list of genera, makes Bonaparte's genus synonymous with *Cichlopsis* of Cabanis; but, as he gives *Turdus aurantius*, Gmelin, from the West Indies as the type, I shall here retain the Prince's name.

364. **Planesticus ruficollis**, PALLAS.

Turdus apud PALLAS, Zool. Ross. As., pl.—BLYTH, Cat. 940—HORSF. Cat. 371—GOULD, Birds of Asia, pl. 67—T. erythrurus, HODGSON.

THE RED-TAILED THRUSH.

Descr.—Male, above, and the ear-coverts, pale cinereous-brown; lores dark brown; eye-streak, fore-neck and breast, under wing-coverts, and tail, deep ferruginous, the tip of the latter and the outer webs of a few of the central feathers, brown; under-parts, from the breast, white, slightly sullied with pale brown.

The female has the throat albescent, with rufous lines, and a row of dusky spots on each side; the eye-streak is whitish; the ferruginous hue of the breast is lighter, and there is more dusky and less rufous on the tail.

Bill dusky, more or less yellow at the base and gape; legs pale brown; irides brown. Length 10 inches; wing $5\frac{1}{2}$; tail 4; tarsus $1\frac{1}{4}$.

This Thrush has, by some, been considered to be a variety of the next, *P. atrogularis*; but it is generally regarded as distinct. It has

been found in various parts of the Himalayas, Nepal, and Bootan; but I did not procure it at Darjeeling, and it is probably found more in the interior of the hills. It is chiefly a bird of Siberia and Northern Asia, migrating to the south in winter. They are said by Pallas to live in forests, to associate in flocks, except when breeding, and to have a fine song.

365. **Planesticus atrogularis**, Temm.

Turdus apud Temminck—Blyth, Cat. 939—Horsf., Cat. 272—Gould, Birds of Europe, pl. 75—T. dubius, Bechstein.—*Mach-reycha*, Beng. (hence 'Richell Thrush' of Latham.)

The Black-throated Thrush.

Descr.—Above, pale cinereous-brown; wings and tail darker brown; tail occasionally tinged with rufous; beneath, the throat albescent-brownish, with some undefined dark markings, the centre of each feather being dark, and lower down these coalesce and form a broad dark brown, or blackish, pectoral gorget; the rest, beneath, pale cinereous-white, a few of the feathers next the breast centred or barred with dusky; under wing-coverts rusty; lower tail-coverts indistinctly barred with brown and rusty.

The female wants the pectoral gorget, but has the breast buff, mixed with dusky, and some brown striæ on the sides of the throat and breast; the abdomen, too, is whiter than in the male, and the lower tail-coverts are buffy-white.

Bill yellow, dusky at the tip; orbits yellow; legs horny-yellow-brown; irides dark brown. Length $10\frac{1}{2}$ inches; extent 17; wing $5\frac{3}{4}$; tail $4\frac{3}{8}$; bill at front $\frac{5}{8}$.

This Thrush is found throughout the Himalayas, inhabiting the higher ranges in the interior, in summer, but descending to the lower ranges in winter; and it is even occasionally found in the plains of Lower Bengal. Mr. Blyth records its having been shot at Barrackpore, near Calcutta. I found it not uncommon near Darjeeling in winter. It keeps to the more open woods, at a level from 3,000 to 8,000 feet, and is occasionally seen on roads and pathways. It feeds both on insects and berries. Gray gives this species as the type of *Cichloides*, Kaup.

366. **Planesticus fuscatus**, PALL.

Turdus, apud PALLAS—T. Naumanni, SCHLEGEL—T. eunomus, TEMM., Pl. Col., 514—BLYTH, Cat. 938—T. Playfairi, BLYTH.

THE DUSKY THRUSH.

Descr.—Male, with the head dusky dark brown, and a white supercilium; ear-coverts dark brown; the rest of the plumage above rufescent-brown, with the wings and tail dusky; beneath, and the sides of the neck, white, with a brown streak on the sides of the neck, and numerous wide brown spots on the breast and the sides of the abdomen.

The female is ruddy-brown above; the crown and ear-coverts dusky; a whitish eye-streak; throat, and the middle of the belly, white, the sides of the throat with dusky lines; breast and flanks brown, with pale margins to the feathers; axillaries ferruginous.

Length $8\frac{1}{2}$ inches; wing 5; tail $2\frac{1}{3}$; bill at front $\frac{11}{16}$; tarsus $1\frac{1}{8}$.

The Dusky Thrush appears to inhabit Northern and Central Asia, extending into China and Japan; and is a very rare winter visitant to the N. W. Himalayas. It is considered by some to be the same as *T. dubius*, Naumann, (figd. in Gould, Birds of Europe, pl. 79), but Prince Bonaparte denies this.

367. **Planesticus pilaris**, LIN.

Turdus apud LINNÆUS—GOULD, Birds of Europe, pl. 76—BLYTH, Cat. 941—HORSF., Cat. 270.

THE FIELDFARE.

Descr.—Head, back of neck, rump, and upper tail-coverts, grey; mantle dull chesnut-brown; wings and tail dusky-brown; chin, throat, and breast, tinged ferruginous, with longitudinal streaks of dark brown, passing on the sides of the breast and body into transverse and cordate spots and blotches; abdomen and vent white, with a few brown markings, chiefly on the flanks.

Bill yellow, with a dusky tip; legs pale brownish; irides brown. Length 11 inches; wing 6; tail 4; bill at front $\frac{5}{8}$; tarsus $1\frac{1}{4}$.

The Fieldfare of Europe has been recently found, though once only, at Simla, in the N. W. Himalayas. Adams records that it is

tolerably common in the oak and pine-forests of Cashmere, but only, I presume, in the winter. The Fieldfare, as is well known, is gregarious in its habits. According to Gray, Kaup proposed for this bird the generic name of *Arceuthornis;* but whether limited to *this,* or synonymous with *Planesticus,* I know not.

Other Eastern Thrushes of this group are *T. rufulus,* Eyton (*modestus,* Blyth), from Burmah, the Malayan peninsula, and the Andaman islands; *T. pallidus,* Gmel. (*daulias,* Temm.), P. C. 515, from China, which, judging from the figure, appears to be something similar to *Merula castanea; T. obscurus,* Gmel. (*pallens,* Pallas), from the North of Asia and China, and which has been killed in Europe; and *T. chrysolaus,* Temm., from Japan and China, already alluded to. There are several African Thrushes, and many in America.

Gen. TURDUS, Lin. (as restricted.)

Char.—Bill moderate, straight at the base; gently curving at the tip, which is distinctly notched; rictal bristles short; wings long, with the 3rd and 4th primaries nearly equal, the 2nd a little shorter; tarsus rather short; feet moderate, claws slightly curved, small.

The true Thrushes, as typified by the Missel Thrush and the Mavis, or Song Thrush of Europe, are represented in India by two species, only found in the Himalayas during the winter. They have the body beneath much spotted, and the back plain.

368. **Turdus Hodgsoni,** LAFRESNAYE.

T. viscivorus, LIN., var.,—BLYTH, Cat. 934—HORSF., Cat. 268.

THE HIMALAYAN MISSEL-THRUSH.

Descr.—Above, pale earthy-brown, with white edgings on the feathers of the middle and greater wing-coverts and of the primary quills; beneath ferruginous-white, with deep brown streaks and drops, narrow on the throat, wider and somewhat cordate on the breast and belly; all the tail-feathers, except the centrals, with the tips and part of the outer webs, whitish, and with some faint dusky bands on their inner webs.

Bill dusky; legs dusky-yellow. Length nearly 11 inches; wing 6½; tail 4½; bill at front nearly ⅞; tarsus 1⅜.

This bird, which so closely resembles the Missel Thrush of Europe, has been separated on account of its larger size; the bill is longer; the colour less rufous above, and less tinged with ferruginous beneath, and the throat and breast are also less streaked. It has only been taken in the N. W. Himalayas. Specimens from Mussooree and Kumaon are in our Museums. I did not procure it in Sikhim.

369. **Turdus iliacus**, Linnæus.

Gould, Birds of Europe, pl. 78—Blyth, Cat. 937.

The Redwing Thrush.

Descr.—Above pale brown, with a whitish eyestreak, and the edges of the wing-coverts and quills tipped pale; beneath white, tinged with ferruginous in parts, and with a dark brown neck-stripe, and streaks of brown on the chin, throat, breast, and sides of abdomen; the sides of the neck, below the nape, pale ferruginous; a patch of bright rufous beneath each wing, and on the flanks.

Bill dusky; legs yellow-brown; irides brown. Length $8\frac{1}{2}$ to 9 inches; wing $4\frac{3}{4}$; tail $3\frac{1}{4}$; bill at front $\frac{5}{8}$; tarsus $1\frac{1}{8}$.

The Redwing has been lately found in the N. W. Himalayas, but very rarely. But in Kohat, as I am assured by Mr. Blyth, according to a very good observer, the late Lieut. Trotter, it is a regular winter visitant in large flocks. Bonaparte states that the oriental bird differs slightly from the European one, but he has not bestowed upon it a separate specific name.

There are no other true Thrushes, spotted beneath, recorded from the East; but there are one or two from Africa.

Gen. Oreocincla, Gould.

Char.—Bill usually lengthened, strong, moderately hooked at the tip and notched; wing long, 3rd and 4th quills longest; tail in some species with fourteen feathers, in others with twelve; toes long; plumage soft and silky, usually mottled above and spotted beneath.

370. **Oreocincla mollissima,** BLYTH.

Turdus apud BLYTH, J. A. S., XI., 185—BLYTH, Cat. 931—HORSF., Cat. 267—T. rostratus and T. oreocincloides, HODGSON—T. Hodgsonii, HOMEYER—*Phanaiok-kiok-pho,* Lepch.—*Teliakanrim,* Bhot.

THE PLAIN-BACKED MOUNTAIN THRUSH

Descr.—Uniform rich olive-brown above, with a slight tinge of orange; wing-coverts and tertiaries margined paler; the greater coverts tipped with black; the inner webs of the primaries dusky, the outer emarginate; under surface of wing marked black and white; the four central feathers of the tail brown; the outermost pair albescent-brown with whitish tips, the two next having successively less white at the tip, and the remainder of the tail being blackish; under parts clear fulvous-white, deeper on the breast and whitish along the centre of the belly; very richly spotted with deep black, more densely so than *O. dauma;* the spots are triangular on the throat, neck and breast; broad, transverse, and crescentic, below the breast; the orbits and eye-streak pale fulvous.

Bill dusky, yellowish at the base of the lower mandible; legs light brown; irides hazel-brown. Length $9\frac{1}{2}$ inches; wing $5\frac{3}{8}$; tail 4; bill at front $\frac{3}{4}$; tarsus $1\frac{3}{8}$; 3rd and 4th primaries equal and longest.

This Thrush, by its plain-coloured back, evidently links the true Thrushes to the Mountain Thrushes. Mr. Blyth named it *mollissimus,* when he considered it as simply a *Turdus*; for it is not more soft in its plumage than the other *Oreocinclæ,* perhaps indeed less so.

It is not uncommon about Darjeeling. I have generally found it feeding on the ground, in small parties, on a rather bare spot on the very summit of some hill, and flying into the brushwood when disturbed. I have found it chiefly at from 4,000 to 8,000 feet. It feeds on insects and berries. It extends throughout the Himalayas; for it has been procured both in Nepal and Kumaon, as well as in Sikhim.

371. **Oreocincla dauma,** LATHAM.

Turdus apud LATHAM—BLYTH, Cat. 932—HORSF., Cat. 266—Oreocincla parvirostris, GOULD, Birds of Europe, pl. 81—Turdus varius, JERDON, Cat. 85.

THE SMALL-BILLED MOUNTAIN THRUSH.

Descr.—Above rich pale olive brown, each feather tipped black, and with a light spot in the centre bordering the black; lores, cheeks, and ear-coverts, whitish, the latter tipped dusky, and fulvous posteriorly; quills dusky at the end, with a narrow and partial margin of light brown, and a pale streak near their base, where they are white beneath; primary coverts black-tipped; the other coverts tipped fulvous; beneath white, tinged with fulvous on the throat and breast, and each feather with a narrow band of deep brown or black, most numerous on the breast, few on the middle of the abdomen, and obsolete on the vent and under tail-coverts.

Bill brownish-dusky; legs and feet brownish-yellow; irides dark hazel-brown; the 3rd quill is the longest, and the 5th slightly longer than 2nd. Length about $10\frac{1}{2}$ inches; wing $5\frac{1}{2}$; tail $3\frac{3}{4}$; bill at front $\frac{8}{10}$; tarsus $1\frac{2}{10}$.

This very elegant and beautifully-marked Thrush is tolerably common throughout the Himalayas, and, during the cold season, descends to the plains. It is not uncommon in Lower Bengal. I first procured it in the jungles south of Cuttack, on the Chilka lake, and afterwards in the Wynaad jungle, and also near Saugor in Central India. It probably extends its summer migrations far North and West, for it has been killed in England and it is known to inhabit Northern Asia and Japan. It is very partial to bamboo jungles, feeding on the ground, and flying up into the bamboos or other trees. Its food does not differ from that of other Thrushes. I found fruit and seed in those which I examined. Its flight is rapid and elegant.

372. **Oreocincla nilgiriensis**, BLYTH.

J. A. S., XI., 7, 181.—BLYTH, Cat. 930—JERDON, 2nd Suppl. Cat. 85 bis—T. varius apud JERDON, Suppl. Cat. 95 bis.

THE NEILGHERRY THRUSH.

Descr.—Above deep olive-brown, each feather edged black; lores pale, white and fulvous; ear-coverts dark, the feathers centred pale; quills rufescent olive-brown, dusky within; primary coverts banded with black, and some of the median and greater coverts tipped fulvous; beneath white, faintly tinged with fulvous, and with numerous close and wide bands of rich deep brown on

the throat and breast, fewer and more distant on the abdomen larger on the flanks, and nearly wanting or the vent and under tail-co…

Length $10\frac{3}{4}$ inches; wing $5\frac{1}{2}$; tail $3\frac{3}{4}$; tarsus $1\frac{2}{10}$; bill at front $1\frac{1}{10}$ (at gape $1\frac{1}{2}$).

This fine, strong-billed, Thrush has, as yet, been only found in the dense woods on the summits of the Neilgherries, where, however, it is not very common. It has a most rich and charming song. It is chiefly found on the higher woods, and never comes out to the open, like the Neilgherry Blackbird.

This Thrush, by its large and strong bill, approximates a good deal to *Zoothera*.

Other species of *Oreocincla*, from the East, are—*O. inframarginata*, Blyth, from the Andamans, of moderate size, and with the bill small; *O. spiloptera*, Bl., from Ceylon, small, with the bill large and strong, and, like *mollissima*, with the upper plumage plain; *O. Horsfieldii*, Bonap. (*varius* apud Horsfield), from Java; and Bonaparte also (Compt. Rend.) gives *O. varia* from Siberia, and *O. Heinii*, Cabanis, from Japan.

One species is found in Australia, and another in Tasmania, if these be really different.

Mimus (the American Mocking-bird genus), usually placed among the Thrushes, has been located by Bonaparte among the *Timalinæ*; and, I think, rightly so.

END OF VOL. I.

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